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(19)(CA) APPLICATION FOR CANADIAN PATENT (12)

(54) Substituted Acrylates and Crop Protection Agents Containing Them

(72) Mueller, Bernd - Germany (Federal Republic of) ;
Roehl, Franz - Germany (Federal Republic of) ;
Koenig, Hartmann - Germany (Federal Republic of) ;
Sauter, Hubert - Germany (Federal Republic of) ;
Lorenz, Gisela - Germany (Federal Republic of) ;
Ammermann, Eberhard - Germany (Federal Republic of) ;

(71) Same as inventor

(30) (DE) P 42 24 457.9 1992/07/24

(57) 11 Claims

Notice: This application is as filed and may therefore contain an incomplete specification.

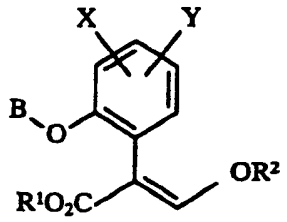
Canada

CCA 3254 (10-92) 41 7530-21-935-3254

Substituted acrylates and crop protection agents containing them

ABSTRACT OF THE DISCLOSURE:

Substituted acrylates of the formula I



I

where:

B is

substituted alkyl, substituted alkenyl, substituted alkynyl, substituted cycloalkyl, substituted cycloalkenyl, substituted cycloalkynyl, or substituted heterocyclyl,

X and Y are identical or different and are

hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkinyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkyloxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkyloxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio,

cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkyloxy, cycloalkenylalkyloxy, cycloalkynylalkyloxy, arylalkyloxy, hetarylalkyloxy or heterocyclylalkyloxy, and

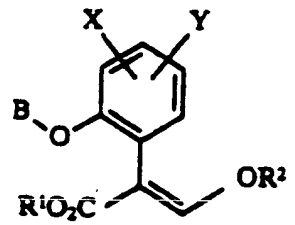
R^1 and R^2 are alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkenyl, and acid addition products and base addition products of such compounds, and fungicides containing these compounds.

Substituted acrylates and crop protection agents containing them

The present invention relates to substituted acrylates and their use as crop protection agents, in particular for controlling fungi, insects, nematodes and spider mites.

It is known that acrylates, for example methyl α-(2-hydroxyphenyl)-β-methoxyacrylate (EP 251 082, EP 178 826) can be used as fungicides. However, their fungicidal action is unsatisfactory.

We have found, surprisingly, that substituted acrylates of the formula I



I

where

B is alkyl which is substituted by 1-4 identical or different substituents R^3, alkenyl which is substituted by 1-4 identical or different substituents R^4, alkynyl which is substituted by 1-4 identical or different substituents R^5, cycloalkyl which is substituted by 1-4 identical or different substituents R^6, cycloalkenyl which is substituted by 1-4 identical or different substituents R^7, cycloalkynyl which is substituted by 1-4 identical or different substituents R^8 or heterocyclyl which is substituted by 1-4 identical or different substituents R^9,

X and Y independently of one another are each hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkyloxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino,

alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cylcoalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenyl-

alkoxy, cylcoalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,
if X and Y are on adjacent carbon atoms, they may be condensed to form an unsubstituted or substituted aromatic or heteroaromatic, alicyclic or heterocyclic, partially or completely hydrogenated ring,
R^1 and R^2 may be substituted and independently of one another are each alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkenyl, R^3 and R^4 may be substituted by 1-4 identical or different substituents R^{10}, and R^3 and R^4 are each nitro, alkoxy, haloalkoxy, alkynyl, cycloalkyl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkenyloxy, alkynyloxy, cycloalkoxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkoximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, cycloalkoxycarbonyl aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetaryl-

sulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, hetarylalkoxy, heterocyclylalkoxy, alkynylalkenyl, cycloalkylalkenyl, cycloalkenylalkenyl, cycloalkynylalkenyl, hetarylalkenyl, heterocyclylalkenyl, alkoximinoalkyl, alkenyloximinoalkyl, alkynyloxminoalkyl, cycloalkoximinoalkyl, cycloalkenyloximinoalkyl, cycloalkynyloximinoalkyl, aryloximinoalkyl, hetaryloximinoalkyl, heterocyclyloximinoalkyl, alkoximinoalkenyl, alkenyloximinoalkenyl, alkynyloximinoalkenyl, cycloalkoximinoalkenyl, cycloalkenyloximinoalkenyl, cycloalkynyloximinoalkenyl, aryloximinoalkenyl, hetaryloximinoalkenyl or heterocyclyloximinoalkenyl,

R^5, R^6, R^7 and R^8 may be substituted by 1-4 identical or different substituents R^{10}, and R^5, R^6, R^7 and R^8 are each nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkoximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyoxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenyl-

aminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino or heterocyclylcarbonylamino, R^9 may be substituted by 1-4 identical or different substituents R^{10}, and R^9 is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkoximino, cycloalkenyloximino,

cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonyl-

amino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

R^{10} may be substituted by 1-4 identical or different substituents R^{11}, and R^{10} is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkoximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl,

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R^{11} may be substituted and is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkyl-

carbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

and their plant-tolerated acid addition products and base addition products not only have high fungitoxic, insecticidal, nematocidal and acaricidal activity but also are very well tolerated by plants.

Acids for acid addition products are, for example, mineral acids, for example hydrochloric acid, hydrobromic acid, phosphoric acid, sulfuric acid or nitric acid, or carboxylic acids, such as formic acid, acetic acid, oxalic acid, malonic acid, lactic acid, malic acid, succinic acid, tartaric acid, citric acid, salicylic acid, p-toluenesulfonic acid or dodecylbenzenesulfonic acid, and also protic compounds generally, eg. saccharin.

Bases for base addition products are, for

example, potassium hydroxide, sodium hydroxide, potassium carbonate, sodium carbonate and ammonium hydroxide.

The novel compounds of the formula I may be obtained in the preparation as mixtures of stereoisomers (E/Z isomers, diastereomers, enantiomers), which can be separated into the individual components in a conventional manner, for example by crystallization or chromatography. Both the individual isomers and mixtures thereof can be used as fungicides, acaricides, nematocides or insecticides and are embraced by the present invention.

The stated alkyl radicals are preferably of 1-10 carbon atoms, are substituted or unsubstituted and are, for example, methyl, ethyl, propyl, n-propyl, isopropyl, butyl, n-butyl, isobutyl, tert-butyl, sec-butyl, pentyl, pent-1-yl, pent-2-yl, pent-3-yl, 2-methylbut-1-yl, 2-methylbut-2-yl, 2-methylbut-3-yl, 3-methylbut-1-yl, 2,2-dimethylprop-1-yl, hexyl, hex-1-yl, hex-2-yl, hex-3-yl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, 4-methylpentyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,2-dimethylbutyl, 2,3-dimethylbutyl, 3,3-dimethylbutyl, 1-ethylbutyl, 2-ethylbutyl, 1,1,2-trimethylpropyl, 1,2,2-trimethylpropyl, 1-ethyl-1-methylpropyl, 1-ethyl-2-methylpropyl, heptyl, hept-1-yl, hept-2-yl, hept-3-yl, hept-4-yl, 1-methylhexyl, 2-methylhexyl, 3-methylhexyl, 4-methylhexyl, 5-methylhexyl, 1-ethylpentyl, 2-ethylpentyl, 3-ethylpentyl, 1-propylbutyl, 1-isopropylbutyl, octyl, oct-1-yl, oct-2-yl, oct-3-yl, oct-4-yl, 1-methylheptyl, 2-methylheptyl, 3-methylheptyl, 4-methylheptyl, 5-methylheptyl, 6-methylheptyl, 1-ethylhexyl, 2-ethylhexyl, 3-ethylhexyl, 4-ethylhexyl, 1-propylpentyl, 2-propylpentyl, nonyl, non-1-yl, non-2-yl, non-3-yl, non-4-yl, non-5-yl, 1-methyloctyl, 2-methyloctyl, 3-methyloctyl, 4-methyloctyl, 5-methyloctyl, 6-methyloctyl, 7-methyloctyl, 4-methyl-2-propylpentyl, decyl, dec-1-yl, dec-2-yl, dec-3-yl, dec-4-yl, dec-5-yl, 1-ethyloctyl, 2-ethyloctyl, 3-ethyloctyl, 4-ethyloctyl, 5-ethyloctyl, 6-ethyloctyl or 2-propylheptyl.

The stated alkenyl radicals are preferably of 2-10 carbon atoms, are unsubstituted or substituted and are, for example, ethenyl, propenyl, 1-propenyl, 2-propenyl, butenyl, 1-butenyl, 2-butenyl, 3-butenyl, 1-methyl-2-propenyl, 2-methyl-2-propenyl, pentenyl, 1-pentenyl, 2-pentenyl, 3-pentenyl, 4-pentenyl, 1-methyl-2-butenyl, 2-methyl-2-butenyl, 3-methyl-2-butenyl, 1-methyl-3-butenyl, 2-methyl-3-butenyl, 3-methyl-3-butenyl, 1,1-dimethyl-2-propenyl, 1,2-dimethyl-2-propenyl, 1-ethyl-2-propenyl, hexenyl, 1-hexenyl, 2-hexenyl, 3-hexenyl, 4-hexenyl, 5-hexenyl, 1-methyl-2-pentenyl, 2-methyl-2-pentenyl, 3-methyl-2-pentenyl, 4-methyl-2-pentenyl, 1-methyl-3-pentenyl, 2-methyl-3-pentenyl, 3-methyl-3-pentenyl, 4-methyl-3-pentenyl, 1-methyl-4-pentenyl, 2-methyl-4-pentenyl, 3-methyl-4-pentenyl, 4-methyl-4-pentenyl, 1,1-dimethyl-2-butenyl, 1,1-dimethyl-3-butenyl, 1,2-dimethyl-2-butenyl, 1,2-dimethyl-3-butenyl, 1,3-dimethyl-2-butenyl, 1,3-dimethyl-3-butenyl, 2,2-dimethyl-3-butenyl, 2,3-dimethyl-2-butenyl, 2,3-dimethyl-3-butenyl, 3,3-dimethyl-2-butenyl, 1-ethyl-2-butenyl, 1-ethyl-3-butenyl, 2-ethyl-2-butenyl, 2-ethyl-3-butenyl, 1,1,2-trimethyl-2-propenyl, 1-ethyl-1-methyl-2-propenyl, heptenyl, octenyl, nonenyl or decenyl.

The stated alkynyl radicals are preferabyl of 2-10 carbon atoms, are substituted or unsubstituted and are, for example, ethynyl, propynyl, 1-propynyl, 2-propynyl, butynyl, 1-butynyl, 2-butynyl, 3-butynyl, 1-methyl-2-propynyl, pentynyl, 1-pentynyl, 2-pentynyl, 3-pentynyl, 4-pentynyl, 1-methyl-2-butynyl, 1-methyl-3-butynyl, 2-methyl-3-butynyl, 1,1-dimethyl-2-methyl-2-pentynyl, hexynyl, 1-methyl-3-pentynyl, 1-methyl-4-pentynyl, 1-methyl-3-pentynyl, 2-methyl-4-pentynyl, 3-methyl-4-pentynyl, 4-methyl-2-pentynyl, 1,1-dimethyl-2-butynyl, 1,1-dimethyl-3-butynyl, 1,2-dimethyl-3-butynyl, 2,2-dimethyl-3-butynyl, 1-ethyl-2-butynyl, 1-ethyl-3-butynyl, 2-ethyl-3-butynyl, 1-ethyl-1-methyl-2-propynyl, heptynyl, octynyl, nonynyl, or decynyl.

The stated halogens are fluorine, chlorine, bromine or iodine.

The stated cycloalkyl radicals are preferably of 3-10 carbon atoms, are substituted or unsubstituted and are, for example, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, cyclononyl, cyclodecyl, bornanyl, norbonanyl, dicyclohexyl, bicyclo[3.3.0]octyl, bicyclo[3.2.1]octyl, bicyclo[2.2.2]octyl or bicyclo[3.3.1]nonyl.

The stated cycloalkenyl radicals are preferably of 3-10 carbon atoms, are unsubstituted or substituted and are, for example, cyclopropenyl, cyclobutenyl, cyclopentenyl, cyclohexenyl, cycloheptenyl, cyclooctenyl, cyclononenyl, cyclodecenyl, bornenyl, norbonenyl, bicyclo[3.3.0]octenyl, bicyclo[3.2.1]octenyl, bicyclo[2.2.2]octenyl or bicyclo[3.3.1]nonenyl.

The stated cycloalkynyl radicals are preferably of 6-10 carbon atoms, are unsubstituted or substituted and are, for example, cyclohexyne, cycloheptyne, cyclooctyne, cyclononyne, cyclodecyne, cycloundecyne or cyclododecyne.

The stated haloalkyl radicals are preferably of 1-4 carbon atoms, are unsubstituted or substituted and are, for example, chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, chlorofluoromethyl, dichlorofluoromethyl, chlorodifluoromethyl, 1-fluoroethyl, 2-fluoroethyl, 2,2-difluoroethyl, 2,2,2-trifluoroethyl, 2-chloro-2-fluoroethyl, 2-chloro-2,2-difluoroethyl, 2,2-dichloro-2-fluoroethyl, 2,2,2-trichloroethyl or pentafluoroethyl.

The stated aryl radicals are preferably of 6, 10 or 14 carbon atoms, are unsubstituted or substituted and are, for example, phenyl, naphthyl, 1-naphthyl, 2-naphthyl, anthracenyl, 1-anthracenyl, 2-anthracenyl or 9-anthracenyl.

The stated hetaryl radicals preferably have 5-14 ring atoms, including 1-4 hetero atoms selected from the

group consisting of N, O and S, are unsubstituted or substituted and are, for example, furyl, 2-furyl, 3-furyl, thienyl, 2-thienyl, 3-thienyl, pyrrolyl, 1-pyrrolyl, 2-pyrrolyl, 3-pyrrolyl, isoxazolyl, 3-isoxazolyl, 4-isoxazolyl, 5-isoxazolyl, isothiazolyl, 3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl, pyrazolyl, 1-pyrazolyl, 3-pyrazolyl, 4-pyrazolyl, 5-pyrazolyl, oxazolyl, 2-oxazolyl, 4-oxazolyl, 5-oxazolyl, thiazolyl, 2-thiazolyl, 4-thiazolyl, 5-thiazolyl, imidazolyl, 1-imidazolyl, 2-imidazolyl, 4-imidazolyl, 5-imidazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiazolyl, 1,3,4-thiadiazolyl, tetrazolyl, 1,2,3,4-thiatriazolyl, 1,2,3,4-oxatriazolyl, pyridyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, pyridazinyl, 3-pyridazinyl, 4-pyridazinyl, pyrimidinyl, 2-pyrimidinyl, 4-pyrimidinyl, 5-pyrimidinyl, pyrazinyl, 2-pyrazinyl, 3-pyrazinyl, 1,2,4-triazinyl, 1,3,5-triazinyl or 1,2,4,5-tetrazinyl.

Adjacent substituents of the heteroaromatics may be condensed to form an aromatic or heteroaromatic ring, so that hetaryl also includes fused ring systems, eg. benzofuranyl, isobenzofuranyl, 1-benzothienyl, 2-benzothienyl, indolyl, isoindolyl, benzisoxazolyl, benzoxazol, benzisothiazolyl, benzothiazolyl, 2-benzothiazolyl, 4-benzothiazolyl, 5-benzothiazolyl, 6-benzothiazolyl, 7-benzothiazolyl, indazolyl, benzimidazolyl, benzofuranyl, dibenzofuranyl, dibenzothienyl, acridinyl, phenanthridinyl, carbazolyl, quinolyl, isiquinolyl, phthalazinyl, quinazolinyl, quinoxalinyl, cinnolinyl, 1,5-naphthyridinyl, 1,6-naphthyridinyl, 1,7-naphthyridinyl, 1,8-naphthyridinyl, pteridinyl, pyrrolopyridinyl, pyrrolopyridazinyl, pyrrolopyrimidinyl, pyrrolopyrazinyl, pyrrolotriazinyl, furopyridinyl, furopyridazinyl, furopyrimidinyl, furopyrazinyl, furotriazinyl, thienopyridinyl, thienopyridazinyl, thienopyrimidinyl, thienopyrazinyl, thienotriazinyl, imidazopyridinyl, imidazopyridazinyl, imidazopyrimidinyl, imidazopyrazinyl, pyrazolopyridinyl, pyrazolopyridazinyl, pyrazolopyrimidinyl,

pyrazolopyrazinyl, isoxazolopyridinyl, isoxazolopyridazinyl, isoxazolopyrimidinyl, isoxazolopyrazinyl, oxazolopyridinyl, oxazolopyridazinyl, oxazolopyrimidinyl, oxazolopyrazinyl, thiazolopyridinyl, thiazolopyridazinyl, thiazolopyrimidinyl, thiazolopyrazinyl, isothiazolopyridinyl, isothiazolopyridazinyl, isothiazolopyrimidinyl, isothiazolopyrazinyl, triazolopyridinyl, triazolopyridazinyl, triazolopyrimidinyl or triazolopyrazinyl.

The stated heterocyclyl radicals preferably have 3-15 ring atoms, including 1-4 hetero atoms selected from the group consisting of N, O and S, are saturated or have parallel unsaturated bonds, are unsubstituted or substituted and are, for example, 2-tetrahydrofuranyl, oxiranyl, 3-tetrahydrofuranyl, 2-tetrahydrothienyl, 3-tetrahydrothienyl, 2-pyrrolidinyl, 3-pyrrolidinyl, 3-isoxazolidinyl, 4-isoxazolidinyl, 4-isothiazolidinyl, 3-pyrazolidinyl, 4-pyrazolidinyl, 5-pyrazolidinyl, 2-oxazolidinyl, 4-oxazolidinyl, 5-oxazolidinyl, 2-thiazolidinyl, 4-thiazolidinyl, 5-thiazolidinyl, 2-imidazolidinyl, 4-imidazolidinyl, 1,2,4-oxadiazolidin-3-yl, 1,2,4-oxadiazolidin-5-yl, 1,2,4-thiadiazolidin-3-yl, 1,2,4-thiadiazolidin-5-yl, 1,2,4-triazolidin-3-yl, 1,3,4-oxadiazolidin-2-yl, 1,3,4-thiadiazolidin-2-yl, 1,3,4-triazolidin-2-yl, 2,3-dihydrofur-2-yl, 2,3-dihydrofur-3-yl, 2,5-dihydrofur-2-yl, 2,5-dihydrofur-3-yl, 2,3-dihydrofur-3-yl, 2,3-dihydrothien-2-yl, 2,3-dihydrothien-3-yl, 2,5-dihydrothien-2-yl, 2,5-dihydrothien-2-yl, 2,4-pyrrolin-2-yl, 2,3-pyrrolin-3-yl, 2,5-pyrrolin-2-yl, 2,5-pyrrolin-3-yl, 2,3-isoxazolin-3-yl, 3,4-isoxazolin-3-yl, 4,5-isoxazolin-2-yl, 2,3-isoxazolin-4-yl, 3,4-isoxazolin-4-yl, 4,5-isoxazolin-5-yl, 2,3-isothiazolin-3-yl, 3,4-isothiazolin-3-yl, 4,5-isothiazolin-3-yl, 2,3-isothiazolin-4-yl, 3,4-isothiazolin-4-yl, 4,5-isothiazolin-4-yl, 2,3-isothiazolin-5-yl, 3,4-isothiazolin-5-yl, 4,5-isothiazolin-5-yl, 2,3-dihydropyrazol-3-yl, 2,3-dihydropyrazol-4-yl, 2,3-dihydropyrazol-5-yl, 3,4-dihydropyrazol-1-yl, 3,4-

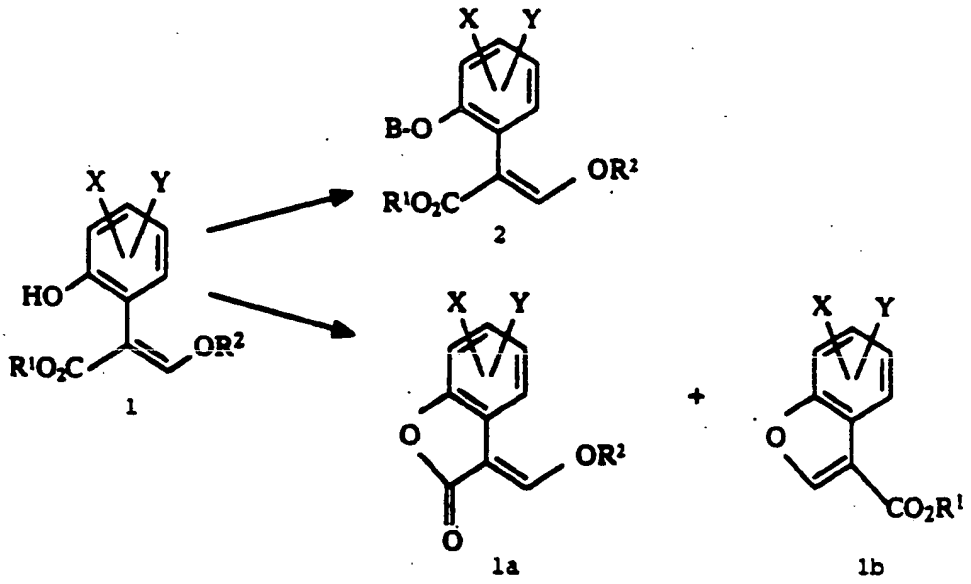
dihydropyrazol-2-yl, 3,4-dihydropyrazol-4-yl, 3,4-dihydropyrazol-5-yl, 4,5-dihydropyrazol-1-yl, 4,5-dihydropyrazol-3-yl, 4,5-dihydropyrazol-4-yl, 4,5-dihydropyrazol-5-yl, 2,3-dihydrooxazol-2-yl, 2,3-dihydrooxazol-3-yl, 2,3-dihydrooxazol-4-yl, 2,3-dihydrooxazol-5-yl, 3,4-dihydrooxazol-2-yl, 3,4-dihydrooxazol-3-yl, 3,4-dihydrooxazol-4-yl, 3,4-dihydrooxazol-5-yl, 3,4-dihydrooxazol-2-yl, 3,4-dihydrooxazol-3-yl, 3,4-dihydrooxazol-4-yl, 2-piperidinyl, 3-piperidinyl, 4-piperidinyl, 3-tetrahydropyridazinyl, 4-tetrahydropyridazinyl, 2-tetrahydropyrimidinyl, 4-tetrahydropyrimidinyl, 5-tetrahydropyrimidinyl, 2-tetrahydropyrazinyl, 1,3,5-tetrahydrotriazin-2-yl, 1,2,4-tetrahydrotriazin-3-yl, 1,3-dihydrooxazin-2-yl, 1,3-dithian-2-yl, oxazol-2-yn-2-yl, 3,4,5,6-tetrahydropyridin-2-yl, 4H-1,3-thiazin-2-yl, 4H-3,1-benzothiazin-2-yl, 1,1-dioxo-2,3,4,5-tetrahydrothin-2-yl, 2H-1,4-benzothiazin-3-yl, 2H-1,4-benzoxazin-3-yl, 1,3-dihydrooxazin-2-yl, 1,3-dithian-2-yl, N-morpholinyl or dihydroquinazolinyl.

Expressly included are those heterocyclic radicals which carry further functional groups, for example oxo or thioxo groups, so that the heterocyclyl radicals also include cyclic esters, thioesters or amides or thio analogs thereof, for example pyrrolidonyl, piperidonyl, 1-azacycloheptan-2-onyl, imidazolidinonyl, diketopiperazinyl or thiopyrrolidonyl.

The novel compounds can be prepared, for example, by the following processes:

For example, the phenol 1 (EP 251 082) can be reacted with the corresponding alkylating agents under alkaline conditions (for example, alkali metal carbonates in dipolar aprotic solvents, such as dimethylformamide, N-methylpyrrolidone, tetramethylurea, dimethylpropyleneurea, dimethylsulfoxide, sulfolane, etc.) to give the novel compounds 2 (Scheme 1)

Scheme 1



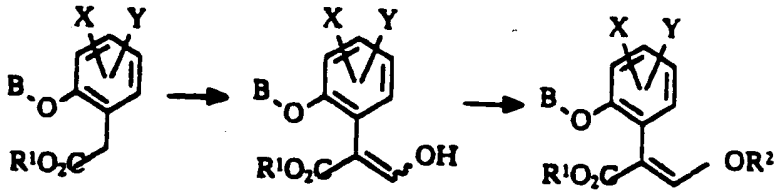
The hetarylation of the phenol 1 is known (EP 242 081) bu the alkylation of 1, in particular with unreactive alkylating agents, to give the ethers 2 presents problems since the cyclization of 1 to 1a or 1b is the only detectable reaction in some cases (Scheme 1). This formation of byproducts can be suppressed if relatively highly concentrated solutions are employed to increase the reaction rate of the bimolecular reaction between the phenol 1 and alkylating agent Hal-B (Hal = Cl, Br or I) to give the active ingredients 2, and the reaction is carried out in the presence of catalytic amounts of iodine salts (eg. NaI or KI) in, for example, the abovementioned dipolar aprotic solvents in order to activate unreactive alkylating agents (Hal = Cl or Br).

The active ingredients 2 are obtained in a similar manner by reacting the phenol 1 with alcohols under the conditions of the Mitsunobu reaction (Synthesis 1981, 1).

Furthermore, the phenylacetates 3 can be reacted

under alkaline conditions to give the formylated products 4, which can be alkylated to the novel compounds 3 (Scheme 2).

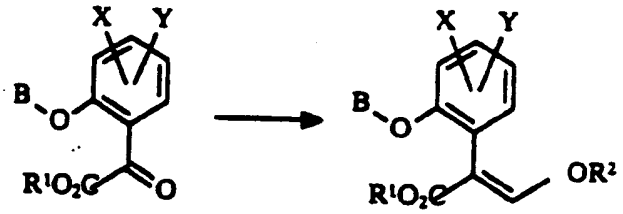
Scheme 2



3 4 2

Moreover, the ketoesters 5 can be subjected to a Wittig reaction with $(C_6H_5)_3P^+-CH_2-O-R^2-Cl$ to give the novel compounds 2 (Scheme 3).

Scheme 3

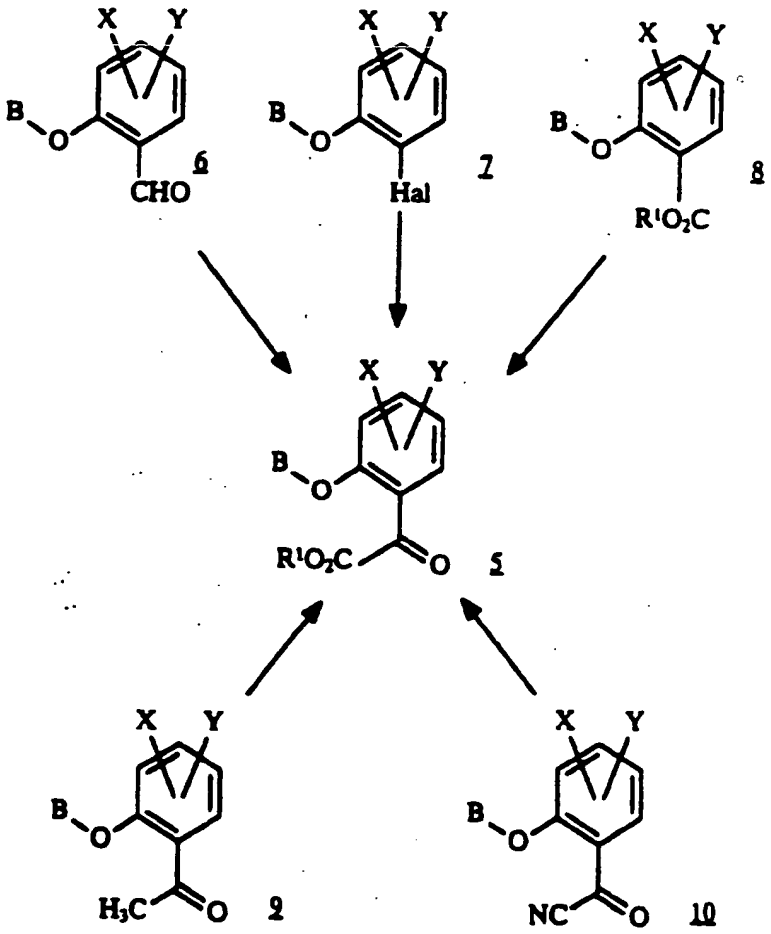


5 2

The chemical literature describes many methods for the synthesis of the α-ketoesters 5 (cf. for example L. Weinstock et al., Synthetic Communications 11 (1981), 943-946; J. March, Advanced Organic Chemistry, 3rd Edition (1985), J. Wiley & Sons; R. Larock, Comprehensive Organic Transformations, 1st Edition 1989, VCH Publishers; M. Pieser, Reagents for Organic Synthesis, J. Wiley & Sons); the synthesis of the ketoesters 5 starting from benzaldehyde 6 via a cyanohydrin route (EP 422 597), starting from ortho-haloaromatics 7 (Hal = Cl, Br or I) via a Grignard route (EP 253 213) starting from benzoates

8 via a Pummerer rearrangement (J. Amer. Chem. Soc. 1966, 5498; Synthesis 1982, 41) starting from acetophenones 9 via an oxidation/esterification (Synthetic Communications 21 (1991), 2045; J. Prakt. Chem. 45 (1892), 377) or starting from benzoyl cyanides 10 (Tetrahedron Lett. 1980, 3539; Scheme 4) is mentioned here merely by way of example.

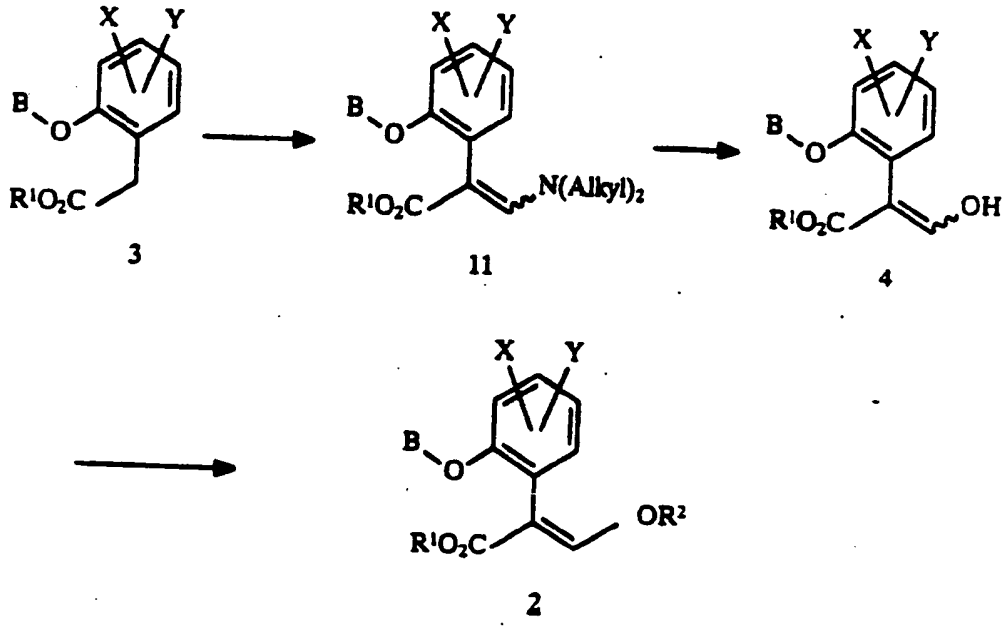
Scheme 4



Furthermore, the novel compounds 2 are obtainable from the phenylacetates 3 via enamine formation to give

11, hydrolysis of the enamine to give the formyl derivative 4 (cf. Scheme 2) and alkylation of the formyl derivative (similarly to DE 40 25 892) (Scheme 5).

Scheme 5

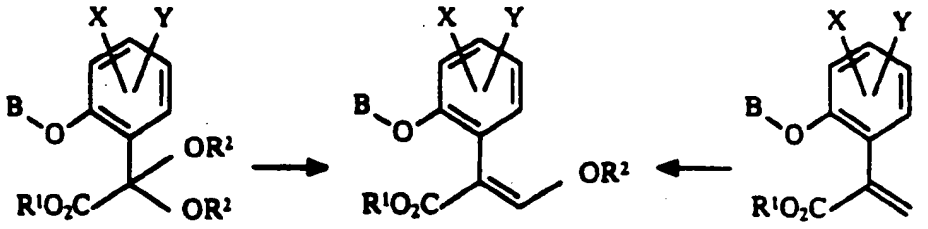


3 11 4

2

Moreover, the enol ethers 2 can be prepared by eliminating an alcohol R^2-OH from the acetals 12 (J. Chem. Soc. Chem. Commun. 1980, 838; Chem. Lett. (1976), 796) and can be obtained from the acrylates 13 by successive reaction with bromine, an alcoholate R^2-O-M (M = Li, Na, K, Mg) and a protic acid, eg. $NaHSO_4$ (J. Chem. Soc. 1958, 153) (similarly to EP 431 328; Scheme 6).

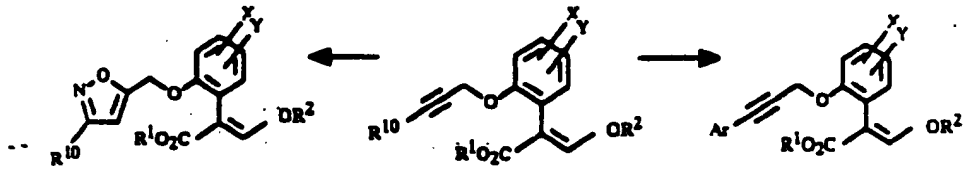
Scheme 6



12 2 13

Moreover, the propargyl ether 14 is a useful intermediate for the synthesis of the novel compounds 15 and 16. For example, the reaction of 14 with aldehyde oximes R^{10}-CH=NOH in the presence of NaOCl solution gives the isoxazole 15, and the reaction of 14 with aryl or hetaryl halides (Hal = I or Br) in the presence of a Pd catalyst gives the acetylene 16 (Scheme 7).

Scheme 7



15 14 16

The Examples which follow illustrate the preparation of the novel compounds.

EXAMPLE 1

Methyl α-(2-(benzoylmethoxy)-phenyl)-β-methoxyacrylate (Table 3, No. 18)

A mixture of 2.1 g (10 mmol) of methyl α-(2-hydroxyphenyl)-β-methoxyacrylate (EP 251 082), 2.0 g (10 mmol) of phenacyl bromide and 1.5 g (11 mmol) of K_2CO_3 in 5 ml of dimethylformamide is stirred overnight at room temperature. An additional 0.6 g of phenacyl bromide and 0.5 g of K_2CO_3 are then added.

Stirring is carried out for 6 hours at room temperature (20°C), the reaction mixture is diluted with water and the aqueous phase is extracted three times with methyl tert-butyl ether. The organic phase is dried over $MgSO_4$ and evaporated down. The residue is purified by column chromatography using hexane/ethyl acetate mixtures. 1.7 g (52%) of the title compound are obtained as a colorless solid (mp. = 76°C).

^{1}H-NMR ($CDCl_3$; δ in ppm):

7.95 (d, broad, 2 H, aromatic); 7.5 (m, 4 H, 3 x aromatic, 1 x vinyl); 7.25 (m, 2 H, aromatic); 7.0 (t, 1 H, J = 8 Hz, aromatic); 6.9 (d, 1 H, J = 8 Hz, aromatic); 5.2 (s, 2 H, O-CH_2); 3.8 (s, 3 H, O-CH_3); 3.65 (s, 3 H, O-CH_3)

EXAMPLE 2

Methyl α-(2-((N-phenylpyrrolidon-3-yl)-oxy)-phenyl)-ß-methoxyacrylate (Table 3, No. 16)

a) 2-((N-Phenylpyrrolidon-3-yl)-oxy)-benzaldehyde

3.2 g (0.13 mol) of sodium hydride are added to 14.8 g (0.12 mol) of salicylaldehyde in 100 ml of dimethylformamide with gentle cooling. After evolution of gas has ceased, 29 g (0.12 mol) of 3-bromo-N-phenylpyrrolidone (prepared similarly to J. Med. Chem. 30 (1987), 1995) are added and stirring is carried out overnight at room temperature. Thereafter, the reaction mixture is diluted with water and the aqueous phase is extracted three times with methyl tert-butyl ether. The combined organic phases are dried over $MgSO_4$ and evaporated down. The residue is purified by column chromatography. 12.8 g (39%) of the title compound are obtained as a pale yellow solid.

^{1}H-NMR ($CDCl_3$; δ in ppm):

10.5 (s, 1 H, CHO); 7.0-8.0 (m, 9 H, aromatic); 5.15 (t, 1 H, J = 8 Hz, O-CH); 3.9 (m, 2 H, N-CH_2); 2.7 (m, 1 H, CH_AH_B); 2.4 (m, 1 H, CH_AH_B)

b) Methyl 2-((N-Phenylpyrrolidon-3-yl)-oxy)-phenylglyoxylate

A mixture of 12.8 g (45 mmol) of the aldehyde from Example 2a in 100 ml of methylene chloride and 5 g (100 mmol) of sodium cyanide and 5 g (94 mmol) of ammonium chloride in 100 ml of water is stirred for 3 hours at room temperature. Thereafter, the organic phase is separated off and the aqueous phase is extracted twice with methylene chloride. The combined organic phases are dried over $MgSO_4$ and evaporated down. The residue is taken up in 100 ml of methanol, and 20 ml of 3 N hydrochloric acid in ether are added. Stirring is carried out overnight at room temperature and the reaction mixture is then evaporated down under reduced pressure.

The residue is taken up in 100 ml of water and heated at 100°C for 30 minutes, a viscous oil separating out. The water is decanted and the residue is taken up in methylene chloride. The organic phase is dried over $MgSO_4$ and evaporated down.

The residue is taken up in 100 ml of methylene chloride, and a solution of 0.3 g of KBr, 0.7 g of $NaH_2PO_4 \cdot H_2O$ and 0.9 g of $Na_2HPO_4 \cdot 2H_2O$ in 100 ml of water is added. 0.2 g of tetramethylpiperidine N-oxide is then added, followed by 40 ml of chlorine bleach (contains 12.5% of active Cl_2) while stirring vigorously. Stirring is continued for 1 hour at room temperature, the aqueous phase is separated off, a further 40 ml of chlorine bleach are added and stirring is continued for a further hour. The organic phase is then separated off, extracted once with water, dried over $MgSO_4$ and evaporated down. The residue is purified by column chromatography. 6.4 g (42%) of the title compound are obtained as a beige solid (mp. = 110°C).

^{1}H-NMR ($CDCl_3$; δ in ppm):

7.9 (d, broad, 1 H, aromatic); 7.7 (d, 2 H, J = 8 Hz, aromatic); 7.6 (t, broad, 1 H, aromatic); 7.4 (t, 2 H, J = 8 Hz, aromatic); 7.3 (d, 1 H, J = 8 Hz, aromatic); 7-7.25 (m, 2 H, aromatic); 5.15 (t, 1 H, J = 8 Hz, O-CH); 4.0 (m, 1 H, N-CH_AH_B); 3.85 (m, 1 H, N-CH_AH_B); 3.85 (s, 3

H, -O-CH_3); 2.65 (m, 1 H, -CH_AH_B); 2.3 (m, 1 H, -CH_AH_B)

c) Methyl α-(2-((N-phenylpyrrolidon-3-yl)-oxy)-phenyl)-ß-methoxyacrylate (Table 3, No. 16)

4.0 g (11 mmol) of methoxymethyltriphenylphosphonium chloride in 1 g (9 mmol) of potassium tert-butylate in 50 ml of tetrahydrofuran are stirred for 30 minutes at room temperature. The mixture is then cooled to -20°C, 2 g (5.9 mmol) of the ketoester from Example 2b are added and the mixture is slowly allowed to warm up to room temperature. Stirring is continued for 2 hours at room temperature, the reaction mixture is diluted with water and the aqueous phase is extracted three times with methyl tert-butyl ether. The combined organic phases are dried over $MgSO_4$ and evaporated down. The residue is purified by column chromatography using hexane/ethyl acetate mixtures. 1.4 g (65%) of the trans-isomer of the title compound are obtained as a pale yellow oil.

^{1}H-NMR ($CDCl_3$; δ in ppm):

7.7 (d, broad, 1 H, aromatic); 7.5 (s, 1 H, vinyl); 6.9 - 7.45 (m, 8 H, aromatic); 4.95 (t, 1 H, J = 8 Hz, O-CH); 3.7 - 4.0 (m, 2 H, N-CH_2); 3.8 (s, 3 H, O-CH_3); 3.7 (s, 3 H, O-CH_3); 2.45 (m, 1 H, -CH_AH_B); 2.25 (m, 1 H, -CH_AH_B)

EXAMPLE 3

Methyl α-(2-(3-(meta-methylphenyl)-prop-2-ynyloxy)-phenyl)-ß-methoxyacrylate (Table 3, No. 6)

a) Methyl 2-(prop-2-ynyloxy)-phenylacetate

13 g (0.54 mol) of sodium hydride are added a little at a time to 75 g (0.45 mol) of methyl ortho-hydroxyphenylacetate in 500 ml of dimethylformamide. Gentle cooling is carried out. After 30 minutes at room temperature, the evolution of gas has ceased, and 65 g (0.54 mol) of propargyl bromide are added. Stirring is carried out overnight at room temperature, after which the reaction mixture is diluted with 1 l of water and the aqueous phase is extracted three times with methyl tert-butyl ether. The combined organic phases are dried over $MgSO_4$ and evaporated down. The residue is distilled.

71.6 g (78%) of the title compound are obtained as a pale yellow liquid (bp. (0.3 mbar) = 98-100°C).

^{1}H-NMR ($CDCl_3$; δ in ppm):

7.25 (m, 2 H, aromatic); 7.0 (m, 2 H, aromatic); 4.7 (d, 1 H, J = about 1 Hz, O-CH_2); 3.7 (s, 1 H, O-CH_3), 3.65 (s, 2 H, CH_2); 2.5 (t, 1 H, J = about 1 Hz, ≡CH)

b) Methyl α-(2-propynyloxyphenyl)-ß-methoxyacrylate

A mixture of 20 g (0.1 mol) of the phenylacetate from Example 3a, 20 ml of methyl formate and 2.7 g (0.11 mol) of sodium hydride in 100 ml of tetrahydrofuran is stirred at room temperature. Gas evolution which is initially slow and then vigorous occurs. Once the evolution of gas has ceased, the reaction mixture is diluted with water and the aqueous phase is extracted twice with methyl tert-butyl ether. These organic phases are discarded. The aqueous phase is then acidified and is extracted three times with methyl tert-butyl ether. The combined phases are filtered under suction with a silica gel and evaporated down.

The residue is taken up in 200 ml of acetone, and 14 g (0.1 mol) of K_2CO_3 and 11 g (0.09 mol) of dimethyl sulfate are added. Stirring is carried out for 4 hours at room temperature, after which the reaction mixture is evaporated down. The residue is taken up in methylene chloride. The organic phase is washed with dilute ammonia and water, dried over $MgSO_4$ and evaporated down. The residue is purified by column chromatography using hexane/ethyl acetate mixtures. 11 g (45%) of the trans-isomer of the title compound are obtained as a pale yellow solid.

^{1}H-NMR ($CDCl_3$; δ in ppm):

7.5 (s, 1 H, vinyl), 7.25 (m, 2 H, aromatic); 7.05 (m, 2 H, aromatic); 4.65 (d, 2 H, J = about 1 Hz, O-CH_2); 3.8 (s, 3 H, O-CH_3); 3.7 (s, 3 H, O-CH_3); 2.5 (t, 1 H, J = about 1 Hz, ≡CH)

c) Methyl α-(2-(3-(meta-methylphenyl)-prop-2-ynyloxy)-phenyl-ß-methoxyacrylate (Table 3, No. 6)

A mixture of 2 g (8.1 mmol) of the propargyl ether from Example 3 b, 1.8 g (8.2 mmol) of meta-iodotoluene, 2 g (20 mmol) of triethylamine, 0.3 g of triphenylphosphine, 20 mg of CuI and 60 mg of palladium(II) acetate in 20 ml of dimethylformamide is stirred for one hour at 70°C. Thereafter, the reaction mixture is diluted with water and the aqueous phase is extracted three times with methyl tert-butyl ether. The combined organic phases are dried over $MgSO_4$ and evaporated down. The residue is purified by column chromatography using hexane/ethyl acetate mixtures. 0.9 g (33%) of the title compound is obtained as a crystalline solid (mp. = 76°C).

^{1}H-NMR ($CDCl_3$; δ in ppm):

7.5 (s, 1 H, vinyl); 6.9-7.4 (m, 8 H, aromatic); 4.9 (s, 2 H, O-CH_2); 3.8 (s, 3 H, O-CH_3); 3.7 (s, 3 H, O-CH_3); 2.5 (s, 3 H, CH_3)

EXAMPLE 4

Methyl α-(2-((3-para-methylphenyliosxazol-5-yl)-methoxy)-phenyl)-β-methoxyacrylate (Table 3, No. 13)

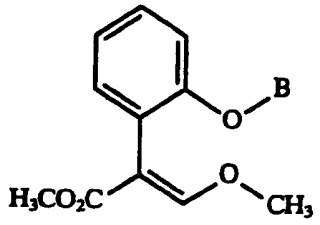
50 ml of chlorine bleach (contains 12.5% of active Cl_2) is added to a solution of 2 g (8.1 mmol) of the propargyl ether from Example 3 b and 1.7 g (12.5 mmol) of p-methylbenzaldehyde oxime in 30 ml of methylene chloride. Stirring is carried out for 30 minutes at room temperature, the phases are separated and the aqueous phase is extracted three times with methylene chloride. The combined organic phases are extracted once with water, dried over $MgSO_4$ and evaporated down. The residue crystallizes and is stirred thoroughly with methyl tert-butyl ether/hexane. 1.9 g (62%) of the trans-isomers of the title compound are obtained as a pale yellow solid (mp. = 82°C).

^{1}H-NMR ($CDCl_3$; δ in ppm):

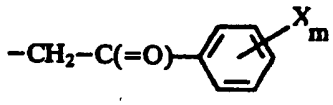
7.7 (d, 2 H, J = 8 Hz, aromatic); 7.55 (s, 1 H, vinyl); 7.25 (m, 4 H, aromatic); 7.05 (m, 2 H, aromatic); 6.6 (s, 1 H, isoxazol); 5.2 (s, 2 H, O-CH_2); 3.85 (s 3 H, O-CH_3); 3.7 (s, 3 H, O-CH_3); 2.4 (s, 3 H, CH_3)

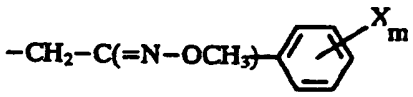
The compounds stated in the Tables below can be prepared in a similar manner.

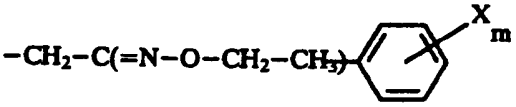
Table 1

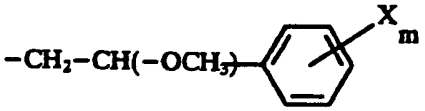


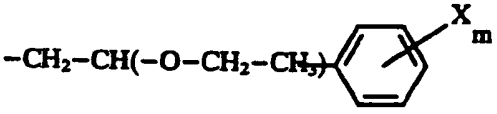
In Table 1, B may have the following meanings:

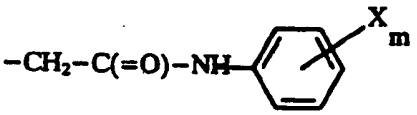
I: 

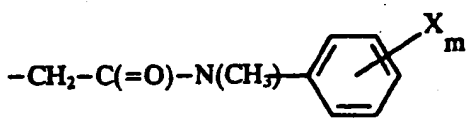
II: 

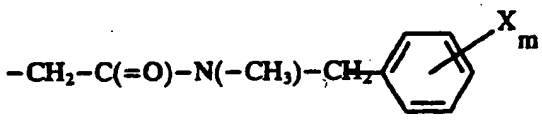
III: 

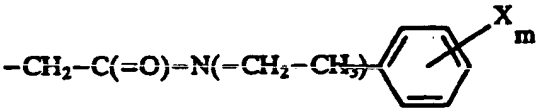
IV: 

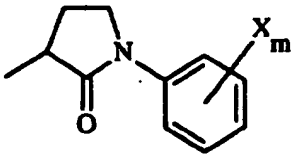
V: 

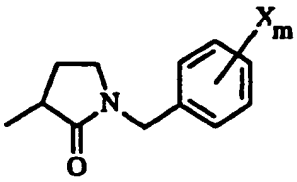
VI: 

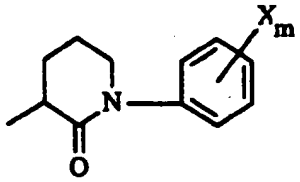
VII: 

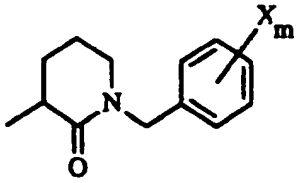
VIII: 

IX: 

X: 

XI: 

XII: 

XIII: 

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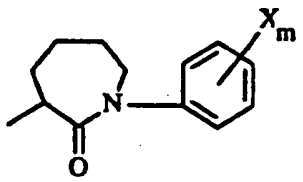
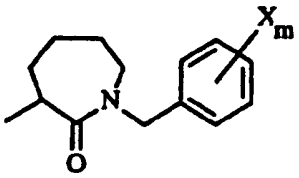
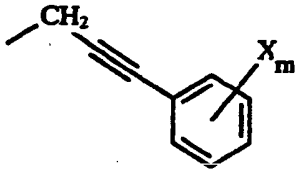


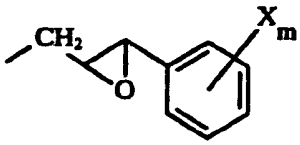
XV:



XVI:



XVII:



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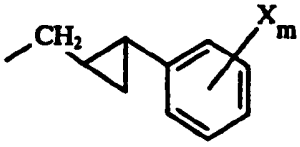

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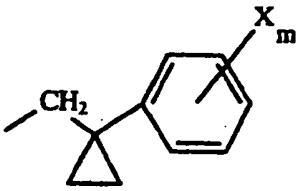
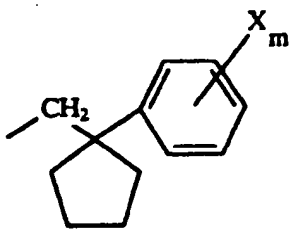
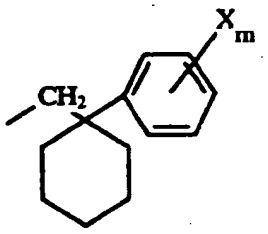


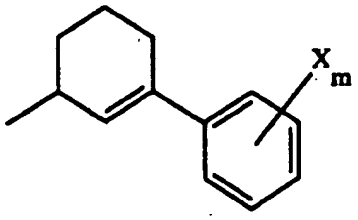
XX:



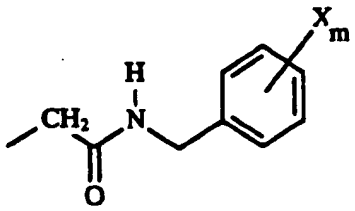
XXI:



XXII:

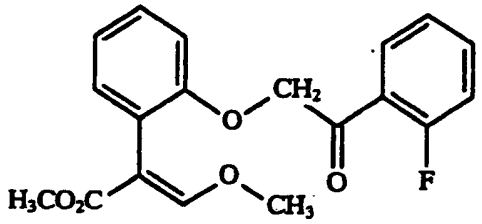


XXIII:

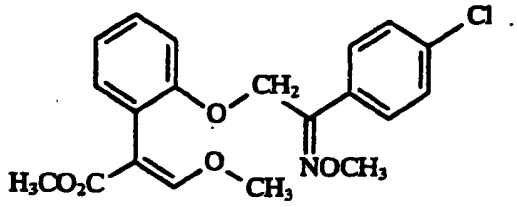


In Table 1 the compounds given below have for example the following meanings:

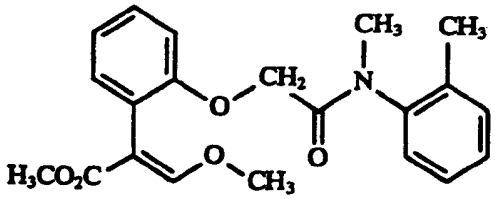
I/1.2:



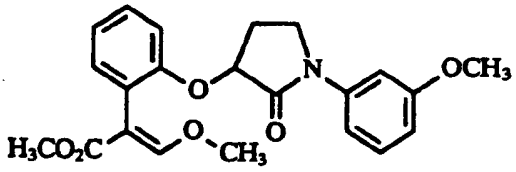
II/1.11:



VII/1.66:

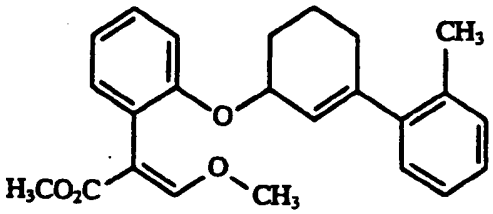


X/1.160:



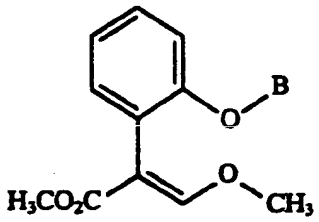
and

XXII/1.66:



For each of the groups B (I to XXIII) X_m may have the following meaning

Table 1



No.	X_m
1	4-C(=O)-C_6H_5
2	2-F
3	3-F
4	4-F
5	2,4-F_2
6	2,4,6-F_3
7	2,3,4,5,6-F_5
8	2,3-F_2
9	2-Cl
10	3-Cl
11	4-Cl
12	2,3-Cl_2
13	2,4-Cl_2
14	2,5-Cl_2
15	2,6-Cl_2
16	3,4-Cl_2
17	3,5-Cl_2
18	2,3,4-Cl_3
19	2,3,5-Cl_3
20	2,3,6-Cl_3
21	2,4,5-Cl_3
22	2,4,6-Cl_3
23	3,4,5-Cl_3

No.	X_m
24	2,3,4,6-Cl_4
25	2,3,5,6-Cl_4
26	2,3,4,5,6-Cl_5
27	2-Br
28	3-Br
29	4-Br
30	2,4-Br_2
31	2,5-Br_2
32	2,6-Br_2
33	2,4,6-Br_3
34	2,3,4,5,6-Br_5
35	2-I
36	3-I
37	4-I
38	2,4-I_2
39	2-Cl, 3-F
40	2-Cl, 4-F
41	2-Cl, 5-F
42	2-Cl, 6-F
43	2-Cl, 3-Br
44	2-Cl, 4-Br
45	2-Cl, 5-Br
46	2-Cl, 6-Br
47	2-Br, 3-Cl
48	2-Br, 4-Cl
49	2-Br, 5-Cl
50	2-Br, 3-F
51	2-Br, 4-F
52	2-Br, 5-F
53	2-Br, 6-F
54	2-F, 3-Cl
55	2-F, 4-Cl
56	2-F, 5-Cl
57	3-Cl, 4-F
58	3-Cl, 5-F
59	3-Cl, 4-Br

No.	X_m
60	3-Cl, 5-Br
61	3-F, 4-Cl
62	3-F, 4-Br
63	3-Br, 4-Cl
64	3-Br, 4-F
[illegible]	2,6-Cl_2, 4-Br
66	2-CH_3
67	3-CH_3
68	4-CH_3
69	2,3-$(CH_3)_2$
70	2,4-$(CH_3)_2$
71	2,5-$(CH_3)_2$
72	2,6-$(CH_3)_2$
73	3,4-$(CH_3)_2$
74	3,5-$(CH_3)_2$
75	2,3,5-$(CH_3)_3$
76	2,3,4-$(CH_3)_3$
77	2,3,6-$(CH_3)_3$
78	2,4,5-$(CH_3)_3$
79	2,4,6-$(CH_3)_3$
80	3,4,5-$(CH_3)_3$
81	2,3,4,6-$(CH_3)_4$
82	2,3,5,6-$(CH_3)_4$
83	2,3,4,5,6-$(CH_3)_5$
84	2-C_2H_5
85	3-C_2H_5
86	4-C_2H_5
87	2,4-$(C_2H_5)_2$
88	2,6-$(C_2H_5)_2$
89	3,5-$(C_2H_5)_2$
90	2,4,6-$(C_2H_5)_3$
91	2-n-C_3H_7
92	3-n-C_3H_7
93	4-n-C_3H_7
94	2-i-C_3H_7
95	3-i-C_3H_7

No.	X_m
96	4-i-C_3H_7
97	2,4-(i-C_3H_7)$_2$
98	2,6-(i-C_3H_7)$_2$
99	3,5-(i-C_3H_7)$_2$
100	2,4,6-(i-C_3H_7)$_3$
101	2-s-C_4H_9
102	3-s-C_4H_9
103	4-s-C_4H_9
104	2-t-C_4H_9
105	3-t-C_4H_9
106	4-t-C_4H_9
107	2,3-(t-C_4H_9)$_2$
108	2,4-(t-C_4H_9)$_2$
109	2,5-(t-C_4H_9)$_2$
110	2,6-(t-C_4H_9)$_2$
111	3,4-(t-C_4H_9)$_2$
112	2,4,6-(t-C_4H_9)$_3$
113	4-n-C_9H_{19}
114	4-n-$C_{12}H_{25}$
115	4-n-$C_{15}H_{31}$
116	4-(1,1,3,3-tetramethylbutyl)
117	4-(2,4,4-trimethylpropyl)
118	2-t-C_4H_9, 4-CH_3
119	2-t-C_4H_9, 5-CH_3
120	2,6-(t-C_4H_9)$_2$, 4-CH_3
121	2-CH_3, 4-t-C_4H_9
122	2-CH_3, 6-t-C_4H_9
123	2-CH_3, 4-i-C_3H_7
124	2-CH_3, 5-i-C_3H_7
125	3-CH_3, 4-i-C_3H_7
126	2-i-C_3H_7, 5-CH_3
127	2,4-(t-C_4H_9)$_2$, 6-i-C_3H_7
128	2-allyl
129	3-allyl
130	4-allyl
131	2-allyl, 6-CH_3

No.	X_m
132	2-cyclo-C_6H_{11}
133	3-cyclo-C_6H_{11}
134	4-cyclo-C_6H_{11}
135	2,4-(cyclo-C_6H_{11})2, 6-CH_3
136	2-CH_3, 4-cyclo-C_6H_{11}
137	2-CH_2-C_6H_5
138	3-CH_2-C_6H_5
139	4-CH_2-C_6H_5
140	2-CH_2-C_6H_5, 4-CH_3
141	2-CH_3, 4-CH_2-C_6H_5
142	2-C_6H_5
143	3-C_6H_5
144	4-C_6H_5
145	4-(2-i-C_3H_7-C_6H_4)
146	4-C_6H_5, 2,6-$(CH_3)_2$
147	2-Cl, 4-C_6H_5
148	2-Br, 4-C_6H_5
149	2-C_6H_5, 4-Cl
150	2-C_6H_5, 4-Br
151	2-$CH_2C_6H_5$, 4-Cl
152	2-$CH_2C_6H_5$, 4-Br
153	2-Cl, 4-$CH_2C_6H_5$
154	2-Br, 4-$CH_2C_6H_5$
155	2-cyclo-C_6H_{11}, 4-Cl
156	2-cyclo-C_6H_{11}, 4-Br
157	2-Cl, 4-cyclo-C_6H_{11}
158	2-Br, 4-cyclo-C_6H_{11}
159	2-OCH_3
160	3-OCH_3
161	4-OCH_3
162	2-OC_2H_5
163	3-O-C_2H_5
164	4-O-C_2H_5
165	2-O-n-C_3H_7
166	3-O-n-C_3H_7
167	4-O-n-C_3H_7

No.	X_n
168	2-O-i-C_3H_7
169	3-O-i-C_3H_7
170	4-O-i-C_3H_7
171	2-O-n-C_6H_{13}
172	3-O-n-C_6H_{13}
173	4-O-n-C_6H_{13}
174	2-O-n-C_8H_{17}
175	3-O-n-C_8H_{17}
176	4-O-n-C_8H_{17}
177	2-O-$CH_2C_6H_5$
178	3-O-$CH_2C_6H_5$
179	4-O-$CH_2C_6H_5$
180	2-O-$(CH_2)_3C_6H_5$
181	3-O-$(CH_2)_3C_6H_5$
182	4-O-$(CH_2)_3C_6H_5$
183	2,4-$(OCH_3)_2$
184	2-CF_3
185	3-CF_3
186	4-CF_3
187	2-OCF_3
188	3-OCF_3
189	4-OCF_3
190	3-OCH_2CHF_2
191	2-NO_2
192	3-NO_2
193	4-NO_2
194	2-CN
195	3-CN
196	4-CN
197	2-CH_3, 3-Cl
198	2-CH_3, 4-Cl
199	2-CH_3, 5-Cl
200	2-CH_3, 6-Cl
201	2-CH_3, 3-F
202	2-CH_3, 4-F
203	2-CH_3, 5-F

No.	X_m
204	2-CH_3, 6-F
205	2-CH_3, 3-Br
206	2-CH_3, 4-Br
207	2-CH_3, 5-Br
208	2-CH_3, 6-Br
209	2-Cl, 3-CH_3
210	2-Cl, 4-CH_3
211	2-Cl, 5-CH_3
212	2-F, 3-CH_3
213	2-F, 4-CH_3
214	2-F, 5-CH_3
215	2-Br, 3-CH_3
216	2-Br, 4-CH_3
217	2-Br, 5-CH_3
218	3-CH_3, 4-Cl
219	3-CH_3, 5-Cl
220	3-CH_3, 4-F
221	3-CH_3, 5-F
222	3-CH_3, 4-Br
223	3-CH_3, 5-Br
224	3-F, 4-CH_3
225	3-Cl, 4-CH_3
226	3-Br, 4-CH_3
227	2-Cl, 4,5-$(CH_3)_2$
228	2-Br, 4,5-$(CH_3)_2$
229	2-Cl, 3,5-$(CH_3)_2$
230	2-Br, 3,5-$(CH_3)_2$
231	2,6-Cl_2, 4-CH_3
32	2,6-F_2, 4-CH_3
233	2,6-Br_2, 4-CH_3
234	2,4-Br_2, 6-CH_3
235	2,4-F_2, 6-CH_3
236	2,4-Br_2, 6-CH_3
237	2,6-$(CH_3)_2$, 4-F
238	2,6-$(CH_3)_2$, 4-Cl
239	2,6-$(CH_3)_2$, 4-Br

No.	X_n
240	3,5-$(CH_3)_2$, 4-F
241	3,5-$(CH_3)_2$, 4-Cl
242	3,5-$(CH_3)_2$, 4-Br
243	2,3,6-$(CH_3)_3$, 4-F
244	2,3,6-$(CH_3)_3$, 4-Cl
245	2,3,6-$(CH_3)_3$, 4-Br
246	2,4-$(CH_3)_2$, 6-F
247	2,4-$(CH_3)_2$, 6-Cl
248	2,4-$(CH_3)_2$, 6-Br
249	2-i-C_3H_7, 4-Cl, 5-CH_3
250	2-Cl, 4-NO_2
251	2-NO_2, 4-Cl
252	2-OCH_3, 5-NO_2
253	2,4-Cl_2, 5-NO_2
254	2,4-Cl_2, 6-NO_2
255	2,6-Cl_2, 4-NO_2
256	2,6-Br_2, 4-NO_2
257	2,6-J_2, 4-NO_2
258	2-CH_3, 5-i-C_3H_7, 4-Cl
259	2-CO_2CH_3
260	3-CO_2CH_3
261	4-CO_2CH_3
262	2-$CO_2(C_2H_5)$
263	3-$CO_2(C_2H_5)$
264	4-$CO_2(C_2H_5)$
265	2-CO_2(n-C_3H_7)
266	3-CO_2(n-C_3H_7)
267	4-CO_2(n-C_3H_7)
268	2-CO_2(i-C_3H_7)
269	3-CO_2(i-C_3H_7)
270	4-CO_2(i-C_3H_7)
271	2-CO_2(n-C_6H_{13})
272	3-CO_2(n-C_6H_{13})
273	4-CO_2(n-C_6H_{13})
274	2-CH_2-OCH_3
275	3-CH_2-OCH_3

No.	X_m
276	4-CH_2-OCH_3
277	2-$CH_2O(C_2H_5)$
278	3-$CH_2O(C_2H_5)$
279	4-$CH_2O(C_2H_5)$
280	2-CH_2O(n-C_3H_7)
281	3-CH_2O(n-C_3H_7)
282	4-CH_2O(n-C_3H_7)
283	2-CH_2O(i-C_3H_7)
284	3-CH_2O(i-C_3H_7)
285	4-CH_2O(i-C_3H_7)
286	2-CHO
287	3-CHO
288	4-CHO
289	2-CO-CH_3
290	3-CO-CH_3
291	4-CO-CH_3
292	2-CO-CH_2-CH_3
293	3-CO-CH_2-CH_3
294	4-CO-CH_2-CH_3
295	2-CO-CH_2-CH_2-CH_3
296	3-CO-CH_2-CH_2-CH_3
297	4-CO-CH_2-CH_2-CH_3
298	2-CO-CH(CH_3)-CH_3
299	3-CO-CH(CH_3)-CH_3
300	4-CO-CH(CH_3)-CH_3
301	2-Me-4-CHO
302	2-Me-4-CH_3-CO
303	2-Me-4-CH_3-CH_2-CO
304	2-Me-4-CH_3-CH_2-CH_2-CO
305	2-Me-4-CH_3-CH(CH_3)-CO
306	2,5-Me_2-4-CHO
307	2,5-Me_2-4-CH_3-CO
308	2,5-Me_2-4-CH_3-CH_2-CO
309	2,5-Me_2-4-CH_3-CH_2-CH_2-CO
310	2,5-Me_2-4-CH_3-CH(CH_3)-CO
311	2-Cl-4-CHO

No.	X_m
312	2-Cl-4-CH_3-CO
313	2-Cl-4-CH_3-CH_2-CO
314	2-Cl-4-CH_3-CH(CH_3)-CO
315	2,5-Cl_2-4-CHO
316	2,5-Cl_2-4-CH_3-CO
317	2,5-Cl_2-4-CH_3-CH_2-CO
318	2,5-Cl_2-4-CH_3-CH_2-CH_2-CO
319	2,5-Cl_2-4-CH_3--CH(CH_3)-CO
320	2-C(=NOCH_3)-CH_3
321	3-C(=NOCH_3)-CH_3
322	4-C(=NOCH_3)-CH_3
323	2-C(=NOC_2H_5)-CH_3
324	3-C(=NOC_2H_5)-CH_3
325	4-C(=NOC_2H_5)-CH_3
326	2-C(=NO-n-C_3H_7)-CH_3
327	3-C(=NO-n-C_3H_7)-CH_3
328	4-C(=NO-n-C_3H_7)-CH_3
329	2-C(=NO-i-C_3H_7)-CH_3
330	3-C(=NO-i-C_3H_7)-CH_3
331	4-C(=NO-i-C_3H_7)-CH_3
332	2-C(=NO-allyl)-CH_3
333	3-C(=NO-allyl)-CH_3
334	4-C(=NO-allyl)-CH_3
335	2-C(=NO-trans-chloroallyl)-CH_3
336	3-C(=NO-trans-chloroallyl)-CH_3
337	4-C(=NO-trans-chloroallyl)-CH_3
338	2-C(=NO-propargyl)-CH_3
339	3-C(=NO-propargyl)-CH_3
340	4-C(=NO-propargyl)-CH_3
341	2-C(=NO-n-C_4H_9)-CH_3
342	3-C(=NO-n-C_4H_9)-CH_3
343	4-C(=NO-n-C_4H_9)-CH_3
344	2-C(=NO-CH_2-C_6H_5)-CH_3
345	3-C(=NO-CH_2-C_6H_5)-CH_3
346	4-C(=NO-CH_2-C_6H_5)-CH_3
347	2-CH_3-4-CH=NOCH_3

No.	X_m
348	2-CH_3-4-CH=NOC_2H_5
349	2-CH_3-4-CH=NO-n-C_3H_7
350	2-CH_3-4-CH=NO-i-C_3H_7
351	2-CH_3-4-CH=NO-allyl
352	2-CH3-4-CH=NO-(trans-chloroallyl)
353	2-CH_3-4-CH=NO-propargyl
354	2-CH_3-4-CH=NO-n-C_4H_9
355	2-CH_3-4-CH=NO-CH_2-C_6H_5
356	2-CH_3-4-(CH_3-C=$NOCH_3$)
357	2-CH_3-4-(CH_3-C=NOC_2H_5)
358	2-CH_3-4-(CH_3-C=NO-n-C_3H_7)
359	2-CH_3-4-(CH_3-C=NO-i-C_3H_7)
360	2-CH_3-4-(CH_3-C=NO-allyl)
361	2-CH_3-4-(CH_3-C=NO-trans-chloroallyl)
362	2-CH_3-4-(CH_3-C=NO-propargyl)
363	2-CH_3-4-(CH_3-C=NO-n-C_4H_9)
364	2-CH_3-4-(CH_3-C=NO-CH_2-C_6H_5)
365	2-CH_3-4-(C_2H_5-C=NO-CH_3)
366	2-CH_3-4-(C_2H_5-C=NO-C_2H_5)
367	2-CH_3-4-(C_2H_5-C=NO-n-C_3H_7)
368	2-CH_3-4-(C_2H_5-C=NO-i-C_3H_7
369	2-CH_3-4-(C_2H_5-C=NO-allyl)
370	2-CH_3-4-(C_2H_5-C=NO-trans-chloroallyl)
371	2-CH_3-4-(C_2H_5-C=NO-propargyl)
372	2-CH_3-4-(C_2H_5-C=NO-n-C_4H_9)
373	2-CH_3-4-(C_2H_5-C=NO-CH_2-C_6H_5)
374	2,5-$(CH_3)_2$-4-(CH_3-C=$NOCH_3$)
375	2,5-$(CH_3)_2$-4-(CH_3-C=NOC_2H_5)
376	2,5-$(CH_3)_2$-4-(CH_3-C=NO-n-C_3H_7)
377	2,5-$(CH_3)_2$-4-(CH_3-C=NO-i-C_3H_7)
378	2,5-$(CH_3)_2$-4-(CH_3-C=NO-allyl)
379	2,5-$(CH_3)_2$-4-(CH_3-C=NO-transchloroallyl)
380	2,5-$(CH_3)_2$-4-(CH_3-C=NO-proparyl)
381	2,5-$(CH_3)_2$-4-(CH_3-C=NO-n-C_4H_9)
382	2,5-$(CH_3)_2$-4-(CH_3-C=NO-CH_2-C_6H_5)
383	2-C_6H_5

No.	X_m
384	3-C_6H_5
385	4-C_6H_5
386	2-(2'-F-C6H4)
387	2-(3'-F-C_6H_4)
388	2-(4'-F-C_6H_4)
389	3-(2'-F-C_6H_4)
390	3-(3'-F-C_6H_4)
391	3-(4'-F-C_6H_4)
392	4-(2'-F-C_6H_4)
393	4-(3'-F-C_6H_4)
394	4-(4'-F-C_6H_4)
395	2-(2'-Cl-C_6H_4)
396	2-(3'-Cl-C_6H_4)
397	2-(4'-Cl-C_6H_4)
398	3-(2'-Cl-C_6H_4)
399	3-(3'-Cl-C_6H_4)
400	3-(4'-Cl-C_6H_4)
401	4-(2'-Cl-C_6H_4)
402	4-(3'-Cl-C_6H_4)
403	4-(4'-Cl-C_6H_4)
405	2-(2'-CH_3-C_6H_4)
406	2-(3'-CH_3-C_6H_4)
407	2-(4'-CH_3-C_6H_4)
408	3-(2'-CH_3-C_6H_4)
409	3-(3'-CH_3-C_6H_4)
410	3-(4'-CH_3-C_6H_4)
411	4-(2'-CH_3-C_6H_4)
412	4-(3'-CH_3-C_6H_4)
413	4-(4'-CH_3-C_6H_4)
414	2-(2'-CH_3-CO-C_6H_4)
415	2-(3'-CH_3-CO-C_6H_4)
416	2-(4'-CH_3-CO-C_6H_4)
417	3-(2'-CH_3-CO-C_6H_4)
418	3-(3'-CH_3-CO-C_6H_4)
419	3-(4'-CH_3-CO-C_6H_4)
420	4-(2'-CH_3-CO-C_6H_4)

No.	X_m
421	4-(3'-CH_3-CO-C_6H_4)
422	4-(4'-CH_3-CO-C_6H_4)
423	2-(2'-(CH_3-C(=NOallyl))-C_6H_4)
424	2-(3'-(CH_3-C(=NOallyl))-C_6H_4)
425	2-(4'-(CH_3-C(=NOallyl))-C_6H_4)
426	3-(2'-(CH_3-C(=NOallyl))-C_6H_4)
427	3-(3'-(CH_3-C(=NOallyl))-C_6H_4)
428	3-(4'-(CH_3-C(=NOallyl))-C_6H_4)
429	4-(2'-(CH_3-C(=NOallyl))-C_6H_4)
430	4-(3'-(CH_3-C(=NOallyl))-C_6H_4)
431	4-(4'-(CH_3-C(=NOallyl))-C_6H_4)
432	2-(2'-CH_3O_2C-C_6H_4)
433	2-(3'-CH_3O_2C-C_6H_4)
434	2-(4'-CH_3O_2C-C_6H_4)
435	3-(2'-CH_3O_2C-C_6H_4)
436	3-(3'-CH_3O_2C-C_6H_4)
437	3-(4'-CH_3O_2C-C_6H_4)
438	4-(2'-CH_3O_2C-C_6H_4)
439	4-(3'-CH_3O_2C-C_6H_4)
440	4-(4'-CH_3O_2C-C_6H_4)
441	2-(2'-CH_3O-C_6H_4)
442	2-(3'-CH_3O-C_6H_4)
443	2-(4'-CH_3O-C_6H_4)
444	3-(2'-CH_3O-C_6H_4)
445	3-(3'-CH_3O-C_6H_4)
446	3-(4'-CH_3O-C_6H_4)
447	4-(2'-CH_3O-C_6H_4)
448	4-(3'-CH_3O-C_6H_4)
449	4-(4'-CH_3O-C_6H_4)
450	2-(2'-O_2N-C_6H_4)
451	2-(3'-O_2N-C_6H_4)
452	2-(4'-O_2N-C_6H_4)
453	3-(2'-O_2N-C_6H_4)
454	3-(3'-O_2N-C_6H_4)
455	3-(4'-O_2N-C_6H_4)
456	4-(2'-O_2N-C_6H_4)

No.	X_m
457	4-(3'-O_2N-C_6H_4)
458	4-(4'-O_2N-C_6H_4)
459	2-(2'-NC-C_6H_4)
460	2-(3'-NC-C_6H_4)
461	2-(4'-NC-C_6H_4)
462	3-(2'-NC-C_6H_4)
463	3-(3'-NC-C_6H_4)
464	3-(4'-NC-C_6H_4)
465	4-(2'-NC-C_6H_4)
466	4-(3'-NC-C_6H_4)
467	4-(4'-NC-C_6H_4)
468	2-(2'-CF_3-C_6H_4)
469	2-(3'-CF_3-C_6H_4)
470	2-(4'-CF_3-C_6H_4)
471	3-(2'-CF_3-C_6H_4)
472	3-(3'-CF_3-C_6H_4)
473	3-(4'-CF_3-C_6H_4)
474	4-(2'-CF_3-C_6H_4)
475	4-(3'-CF_3-C_6H_4)
476	4-(4'-CF_3-C_6H_4)
477	2-O-C_6H_5
475	3-O-C_6H_5
476	4-O-C_6H_5
478	2-O-(2'-F-C6H4)
479	2-O-(3'-F-C_6H_4)
480	2-O-(4'-F-C_6H_4)
481	3-O-(2'-F-C_6H_4)
482	3-O-(3'-F-C_6H_4)
483	3-O-(4'-F-C_6H_4)
484	4-O-(2'-F-C_6H_4)
485	4-O-(3'-F-C_6H_4)
486	4-O-(4'-F-C_6H_4)
487	2-O-(2'-Cl-C_6H_4)
488	2-O-(3'-Cl-C_6H_4)
489	2-O-(4'-Cl-C_6H_4)
490	3-O-(2'-Cl-C_6H_4)

No.	X_n
491	3-O-(3'-Cl-C_6H_4)
492	3-O-(4'-Cl-C_6H_4)
493	3-O-(4'-Cl-C_6H_4)
494	4-O-(2'-Cl-C_6H_4)
495	4-O-(3'-Cl-C_6H_4)
496	4-O-(4'-Cl-C_6H_4)
497	2-O-(2'-CH_3-C_6H_4)
498	2-O-(3'-CH_3-C_6H_4)
499	2-O-(4'-CH_3-C_6H_4)
500	3-O-(2'-CH_3-C_6H_4)
501	3-O-(3'-CH_3-C_6H_4)
502	3-O-(4'-CH_3-C_6H_4)
503	4-O-(2'-CH_3-C_6H_4)
504	4-O-(3'-CH_3-C_6H_4)
505	4-O-(4'-CH_3-C_6H_4)
506	2-O-(2'-CH_3-CO-C_6H_4)
507	2-O-(3'-CH_3-CO-C_6H_4)
508	2-O-(4'-CH_3-CO-C_6H_4)
509	3-O-(2'-CH_3-CO-C_6H_4)
510	3-O-(3'-CH_3-CO-C_6H_4)
511	3-O-(4'-CH_3-CO-C_6H_4)
512	4-O-(2'-CH_3-CO-C_6H_4)
513	4-O-(3'-CH_3-CO-C_6H_4)
514	4-O-(4'-CH_3-CO-C_6H_4)
515	2-O-(2'-(CH_3-C(=NOallyl))-C_6H_4)
516	2-O-(3'-(CH_3-C(=NOallyl))-C_6H_4)
517	2-O-(4'-(CH_3-C(=NOallyl))-C_6H_4)
518	3-O-(2'-(CH_3-C(=NOallyl))-C_6H_4)
519	3-O-(3'-(CH_3-C(=NOallyl))-C_6H_4)
520	3-O-(4'-(CH_3-C(=NOallyl))-C_6H_4)
521	4-O-(2'-(CH_3-C(=NOallyl))-C_6H_4)
522	4-O-(3'-(CH_3-C(=NOallyl))-C_6H_4)
523	4-O-(4'-(CH_3-C(=NOallyl))-C_6H_4)
524	2-O-(2'-CH_3O_2C-C_6H_4)
525	2-O-(3'-CH_3O_2C-C_6H_4)
526	2-O-(4'-CH_3O_2C-C_6H_4)

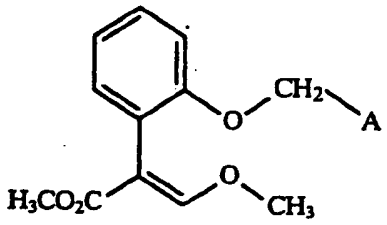
No.	X_m
527	3-O-(2'-CH_3O_2C-C_6H_4)
528	3-O-(3'-CH_3O_2C-C_6H_4)
529	3-O-(4'-CH_3O_2C-C_6H_4)
530	4-O-(2'-CH_3O_2C-C_6H_4)
531	4-O-(3'-CH_3O_2C-C_6H_4)
532	4-O-(4'-CH_3O_2C-C_6H_4)
533	2-O-(2'-CH_3O-C_6H_4)
534	2-O-(3'-CH_3O-C_6H_4)
535	2-O-(4'-CH_3O-C_6H_4)
536	3-O-(2'-CH_3O-C_6H_4)
537	3-O-(3'-CH_3O-C_6H_4)
538	3-O-(4'-CH_3O-C_6H_4)
539	4-O-(2'-CH_3O-C_6H_4)
540	4-O-(3'-CH_3O-C_6H_4)
541	4-O-(4'-CH_3O-C_6H_4)
542	2-O-(2'-O_2N-C_6H_4)
543	2-O-(3'-O_2N-C_6H_4)
544	2-O-(4'-O_2N-C_6H_4)
545	3-O-(2'-O_2N-C_6H_4)
546	3-O-(3'-O_2N-C_6H_4)
547	3-O-(4'-O_2N-C_6H_4)
548	4-O-(2'-O_2N-C_6H_4)
549	4-O-(3'-O_2N-C_6H_4)
550	4-O-(4'-O_2N-C_6H_4)
551	2-O-(2'-NC-C_6H_4)
552	2-O-(3'-NC-C_6H_4)
553	2-O-(4'-NC-C_6H_4)
554	3-O-(2'-NC-C_6H_4)
555	3-O-(3'-NC-C_6H_4)
556	3-O-(4'-NC-C_6H_4)
557	4-O-(2'-NC-C_6H_4)
558	4-O-(3'-NC-C_6H_4)
559	4-O-(4'-NC-C_6H_4)
560	2-O-(2'-CF_3-C_6H_4)
561	2-O-(3'-CF_3-C_6H_4)
562	2-O-(4'-CF_3-C_6H_4)

No.	X_n
563	3-O-(2'-CF_3-C_6H_4)
564	3-O-(3'-CF_3-C_6H_4)
565	3-O-(4'-CF_3-C_6H_4)
566	4-O-(2'-CF_3-C_6H_4)
567	4-O-(3'-CF_3-C_6H_4)
568	4-O-(4'-CF_3-C_6H_4)
569	2-pyridinyl-2'
570	2-pyridinyl-3'
571	2-pyridinyl-4'
572	3-pyridinyl-2'
573	3-pyridinyl-3'
574	3-pyridinyl-4'
575	4-pyridinyl-2'
576	4-pyridinyl-3'
577	4-pyridinyl-4'
578	2-pyrimidinyl-2'
579	2-pyrimidinyl-3'
580	2-pyrimidinyl-4'
581	3-pyrimidinyl-2'
582	3-pyrimidinyl-3'
583	3-pyrimidinyl-4'
584	4-pyrimidinyl-2'
585	4-pyrimidinyl-3'
586	4-pyrimidinyl-4'
587	2-pyrazolyl-1'
588	2-pyrazolyl-3'
589	2-pyrazolyl-4'
590	3-pyrazolyl-1'
591	3-pyrazolyl-3'
592	3-pyrazolyl-4'
593	4-pyrazolyl-1'
594	4-pyrazolyl-3'
595	4-pyrazolyl-4'
596	2-isoxazolyl-3'
597	2-isoxazolyl-4'
598	2-isoxazolyl-5'

No.	X_m
599	3-isoxazolyl-3'
600	3-isoxazolyl-4'
601	3-isoxazolyl-5'
602	4-isoxazolyl-3'
603	4-isoxazolyl-4'
604	4-isoxazolyl-5'
605	2-isothiazolyl-3'
606	2-isothiazolyl-4'
607	2-isothiazolyl-5'
608	3-isothiazolyl-3'
609	3-isothiazolyl-4'
610	3-isothiazolyl-5'
611	4-isothiazolyl-3'
612	4-isothiazolyl-4'
613	4-isothiazolyl-5'
614	2-imidazolyl-1'
615	2-imidazolyl-2'
616	2-imidazolyl-4'
617	3-imidazolyl-1'
618	3-imidazolyl-2'
619	3-imidazolyl-4'
620	4-imidazolyl-1'
621	4-imidazolyl-2'
622	4-imidazolyl-4'
623	2-oxazolyl-2'
624	2-oxazolyl-4'
625	2-oxazolyl-5'
626	3-oxazolyl-2'
627	3-oxazolyl-4'
628	3-oxazolyl-5'
629	4-oxazolyl-2'
630	4-oxazolyl-4'
631	4-oxazolyl-5'
632	2-thiazolyl-2'
633	2-thiazolyl-4'
634	2-thiazolyl-5'

No.	X_n
635	3-thiazolyl-2'
636	3-thiazolyl-4'
637	3-thiazolyl-5'
638	4-thiazolyl-2'
639	4-thiazolyl-4'
640	4-thiazolyl-5'

Table 2



No.	A
1	pyrrolyl-3
2	N-CH_3-pyrrolyl-3
3	N-C_6H_5-pyrrolyl-3
4	N-(4'-CH_3-C_6H_4)-pyrrolyl-3
5	N-(3'-CH_3-C_6H_4)-pyrrolyl-3
6	N-(2'-CH_3-C_6H_4)-pyrrolyl-3
7	N-(4'-CH_3O-C_6H_4)-pyrrolyl-3
8	N-(3'-CH_3O-C_6H_4)-pyrrolyl-3
9	N-(2'-CH_3O-C_6H_4)-pyrrolyl-3
10	N-(4'-NO_2-C_6H_4)-pyrrolyl-3
11	N-(3'-NO_2-C_6H_4)-pyrrolyl-3
12	N-(2'-NO_2-C_6H_4)-pyrrolyl-3
13	N-(4'-CN-C_6H_4)-pyrrolyl-3
14	N-(3'-CN-C_6H_4)-pyrrolyl-3
15	N-(2'-CN-C_6H_4)-pyrrolyl-3
16	N-(4'-Cl-C_6H_4)-pyrrolyl-3
17	N-(3'-Cl-C_6H_4)-pyrrolyl-3
18	N-(2'-Cl-C_6H_4)-pyrrolyl-3
19	pyrrolyl-2
20	N-CH_3-pyrrolyl-2
21	N-C_6H_5-pyrrolyl-2
22	N-(4'-CH_3-C_6H_4)-pyrrolyl-2
23	N-(3'-CH_3-C_6H_4)-pyrrolyl-2
24	N-(2'-CH_3-C_6H_4)-pyrrolyl-2
25	N-(4'-CH_3O-C_6H_4)-pyrrolyl-2

No.	A
26	N-(3'-CH_3O-C_6H_4)-pyrrolyl-2
27	N-(2'-CH_3O-C_6H_4)-pyrrolyl-2
28	N-(4'-NO_2-C_6H_4)-pyrrolyl-2
29	N-(3'-NO_2-C_6H_4)-pyrrolyl-2
30	N-(2'-NO_2-C_6H_4)-pyrrolyl-2
31	N-(4'-CN-C_6H_4)-pyrrolyl-2
32	N-(3'-CN-C_6H_4)-pyrrolyl-2
33	N-(2'-CN-C_6H_4)-pyrrolyl-2
34	N-(4'-Cl-C_6H_4)-pyrrolyl-2
35	N-(3'-Cl-C_6H_4)-pyrrolyl-2
36	N-(2'-Cl-C_6H_4)-pyrrolyl-2
37	furyl-2
38	5-CH_3-furyl-2
39	5-C_6H_5-furyl-2
40	5-(4'-CH_3-C_6H_4)-furyl-2
41	5-(3'-CH_3-C_6H_4)-furyl-2
42	5-(2'-CH_3-C_6H_4)-furyl-2
43	5-(4'-CH_3O-C_6H_4)-furyl-2
44	5-(3'-CH_3O-C_6H_4)-furyl-2
45	5-(2'-CH_3O-C_6H_4)-furyl-2
46	5-(4'-NO_2-C_6H_4)-furyl-2
47	5-(3'-NO_2-C_6H_4)-furyl-2
48	5-(2'-NO_2-C_6H_4)-furyl-2
49	5-(4'-CN-C_6H_4)-furyl-2
50	5-(3'-CN-C_6H_4)-furyl-2
51	5-(2'-CN-C_6H_4)-furyl-2
52	5-(4'-Cl-C_6H_4)-furyl-2
53	5-(3'-Cl-C_6H_4)-furyl-2
54	5-(2'-Cl-C_6H_4)-furyl-2
55	4-CH_3-furyl-2
56	4-C_6H_5-furyl-2
57	4-(4'-CH_3-C_6H_4)-furyl-2
58	4-(3'-CH_3-C_6H_4)-furyl-2
59	4-(2'-CH_3-C_6H_4)-furyl-2
60	4-(4'-CH_3O-C_6H_4)-furyl-2
61	4-(3'-CH_3O-C_6H_4)-furyl-2

No.	A
62	4-(2'-CH_3O-C_6H_4)-furyl-2
63	4-(4'-NO_2-C_6H_4)-furyl-2
64	4-(3'-NO_2-C_6H_4)-furyl-2
65	4-(2'-NO_2-C_6H_4)-furyl-2
66	4-(4'-CN-C_6H_4)-furyl-2
67	4-(3'-CN-C_6H_4)-furyl-2
68	4-(2'-CN-C_6H_4)-furyl-2
69	4-(4'-Cl-C_6H_4)-furyl-2
70	4-(3'-Cl-C_6H_4)-furyl-2
71	4-(2'-Cl-C_6H_4)-furyl-2
72	thienyl-2
73	5-CH_3-thienyl-2
74	5-C_6H_5-thienyl-2
75	5-(4'-CH_3-C_6H_4)-thienyl-2
76	5-(3'-CH_3-C_6H_4)-thienyl-2
77	5-(2'-CH_3-C_6H_4)-thienyl-2
78	5-(4'-CH_3O-C_6H_4)-thienyl-2
79	5-(3'-CH_3O-C_6H_4)-thienyl-2
80	5-(2'-CH_3O-C_6H_4)-thienyl-2
81	5-(4'-NO_2-C_6H_4)-thienyl-2
82	5-(3'-NO_2-C_6H_4)-thienyl-2
83	5-(2'-NO_2-C_6H_4)-thienyl-2
84	5-(4'-CN-C_6H_4)-thienyl-2
85	5-(3'-CN-C_6H_4)-thienyl-2
86	5-(2'-CN-C_6H_4)-thienyl-2
87	5-(4'-Cl-C_6H_4)-thienyl-2
88	5-(3'-Cl-C_6H_4)-thienyl-2
89	5-(2'-Cl-C_6H_4)-thienyl-2
90	4-CH_3-thienyl-2
91	4-C_6H_5-thienyl-2
92	4-(4'-CH_3-C_6H_4)-thienyl-2
93	4-(3'-CH_3-C_6H_4)-thienyl-2
94	4-(2'-CH_3-C_6H_4)-thienyl-2
95	4-(4'-CH_3O-C_6H_4)-thienyl-2
96	4-(3'-CH_3O-C_6H_4)-thienyl-2
97	4-(2'-CH_3O-C_6H_4)-thienyl-2

No.	A
98	4-(4'-NO_2-C_6H_4)-thienyl-2
99	4-(3'-NO_2-C_6H_4)-thienyl-2
100	4-(2'-NO_2-C_6H_4)-thienyl-2
101	4-(4'-CN-C_6H_4)-thienyl-2
102	4-(3'-CN-C_6H_4)-thienyl-2
103	4-(2'-CN-C_6H_4)-thienyl-2
104	4-(4'-Cl-C_6H_4)-thienyl-2
105	4-(3'-Cl-C_6H_4)-thienyl-2
106	4-(2'-Cl-C_6H_4)-thienyl-2
107	thienyl-3
108	5-CH_3-thienyl-3
109	5-C_6H_5-thienyl-3
110	5-(4'-CH_3-C_6H_4)-thienyl-3
111	5-(3'-CH_3-C_6H_4)-thienyl-3
112	5-(2'-CH_3-C_6H_4)-thienyl-3
113	5-(4'-CH_3O-C_6H_4)-thienyl-3
114	5-(3'-CH_3O-C_6H_4)-thienyl-3
115	5-(2'-CH_3O-C_6H_4)-thienyl-3
116	5-(4'-NO_2-C_6H_4)-thienyl-3
117	5-(3'-NO_2-C_6H_4)-thienyl-3
118	5-(2'-NO_2-C_6H_4)-thienyl-3
119	5-(4'-CN-C_6H_4)-thienyl-3
120	5-(3'-CN-C_6H_4)-thienyl-3
121	5-(2'-CN-C_6H_4)-thienyl-3
122	5-(4'-Cl-C_6H_4)-thienyl-3
123	5-(3'-Cl-C_6H_4)-thienyl-3
124	5-(2'-Cl-C_6H_4)-thienyl-3
125	pyrazolyl-4
126	N-CH_3-pyrazolyl-4
127	N-C_6H_5-pyrazolyl-4
128	N-(4'-CH_3-C_6H_4)-pyrazolyl-4
129	N-(3'-CH_3-C_6H_4)-pyrazolyl-4
130	N-(2'-CH_3-C_6H_4)-pyrazolyl-4
131	N-(4'-CH_3O-C_6H_4)-pyrazolyl-4
132	N-(3'-CH_3O-C_6H_4)-pyrazolyl-4
133	N-(2'-CH_3O-C_6H_4)-pyrazolyl-4

No.	A
134	N-(4'-NO_2-C_6H_4)-pyrazolyl-4
135	N-(3'-NO_2-C_6H_4)-pyrazolyl-4
136	N-(2'-NO_2-C_6H_4)-pyrazolyl-4
137	N-(4'-CN-C_6H_4)-pyrazolyl-4
138	N-(3'-CN-C_6H_4)-pyrazolyl-4
139	N-(2'-CN-C_6H_4)-pyrazolyl-4
140	N-(4'-Cl-C_6H_4)-pyrazolyl-4
141	N-(3'-Cl-C_6H_4)-pyrazolyl-4
142	N-(2'-Cl-C_6H_4)-pyrazolyl-4
143	3-CH_3-N-methylpyrazolyl-4
144	3-C_6H_5-N-methylpyrazolyl-4
145	3-(4'-CH_3-C_6H_4)-N-methylpyrazolyl-4
146	3-(3'-CH_3-C_6H_4)-N-methylpyrazolyl-4
147	3-(2'-CH_3-C_6H_4)-N-methylpyrazolyl-4
148	3-(4'-CH_3O-C_6H_4)-N-methylpyrazolyl-4
149	3-(3'-CH_3O-C_6H_4)-N-methylpyrazolyl-4
150	3-(2'-CH_3O-C_6H_4)-N-methylpyrazolyl-4
151	3-(4'-NO_2-C_6H_4)-N-methylpyrazolyl-4
152	3-(3'-NO_2-C_6H_4)-N-methylpyrazolyl-4
153	3-(2'-NO_2-C_6H_4)-N-methylpyrazolyl-4
154	3-(4'-CN-C_6H_4)-N-methylpyrazolyl-4
155	3-(3'-CN-C_6H_4)-N-methylpyrazolyl-4
156	3-(2'-CN-C_6H_4)-N-methylpyrazolyl-4
157	3-(4'-Cl-C_6H_4)-N-methylpyrazolyl-4
158	3-(3'-Cl-C_6H_4)-N-methylpyrazolyl-4
159	3-(2'-Cl-C_6H_4)-N-methylpyrazolyl-4
160	isoxazolyl-5
161	3-CH_3-isoxazolyl-5
162	3-C_6H_5-isoxazolyl-5
163	3-(4'-CH_3-C_6H_4)-isoxazolyl-5
164	3-(3'-CH_3-C_6H_4)-isoxazolyl-5
165	3-(2'-CH_3-C_6H_4)-isoxazolyl-5
166	3-(4'-CH_3O-C_6H_4)-isoxazolyl-5
167	3-(3'-CH_3O-C_6H_4)-isoxazolyl-5
168	3-(2'-CH_3O-C_6H_4)-isoxazolyl-5
169	3-(4'-NO_2-C_6H_4)-isoxazolyl-5

No.	A
170	3-(3'-NO_2-C_6H_4)-isoxazolyl-5
171	3-(2'-NO_2-C_6H_4)-isoxazolyl-5
172	3-(4'-CN-C_6H_4)-isoxazolyl-5
173	3-(3'-CN-C_6H_4)-isoxazolyl-5
174	3-(2'-CN-C_6H_4)-isoxazolyl-5
175	3-(4'-Cl-C_6H_4)-isoxazolyl-5
176	3-(3'-Cl-C_6H_4)-isoxazolyl-5
177	3-(2'-Cl-C_6H_4)-isoxazolyl-5
178	4-chloroisoxazolyl-5
179	3-CH_3-4-chloroisoxazolyl-5
180	3-C_6H_5-4-chloroisoxazolyl-5
181	3-(4'-CH_3-C_6H_4)-4-chloroisoxazolyl-5
182	3-(3'-CH_3-C_6H_4)-4-chloroisoxazolyl-5
183	3-(2'-CH_3-C_6H_4)-4-chloroisoxazolyl-5
184	3-(4'-CH_3O-C_6H_4)-4-chloroisoxazolyl-5
185	3-(3'-CH_3O-C_6H_4)-4-chloroisoxazolyl-5
186	3-(2'-CH_3O-C_6H_4)-4-chloroisoxazolyl-5
187	3-(4'-NO_2-C_6H_4)-4-chloroisoxazolyl-5
188	3-(3'-NO_2-C_6H_4)-4-chloroisoxazolyl-5
189	3-(2'-NO_2-C_6H_4)-4-chloroisoxazolyl-5
190	3-(4'-CN-C_6H_4)-4-chloroisoxazolyl-5
191	3-(3'-CN-C_6H_4)-4-chloroisoxazolyl-5
192	3-(2'-CN-C_6H_4)-4-chloroisoxazolyl-5
193	3-(4'-Cl-C_6H_4)-4-chloroisoxazolyl-5
194	3-(3'-Cl-C_6H_4)-4-chloroisoxazolyl-5
195	3-(2'-Cl-C_6H_4)-4-chloroisoxazolyl-5
196	isoxazolyl-3
197	5-CH_3-isoxazolyl-3
198	5-C_6H_5-isoxazolyl-3
199	5-(4'-CH_3-C_6H_4)-isoxazolyl-3
200	5-(3'-CH_3-C_6H_4)-isoxazolyl-3
201	5-(2'-CH_3-C_6H_4)-isoxazolyl-3
202	5-(4'-CH_3O-C_6H_4)-isoxazolyl-3
203	5-(3'-CH_3O-C_6H_4)-isoxazolyl-3
204	5-(2'-CH_3O-C_6H_4)-isoxazolyl-3
205	5-(4'-NO_2-C_6H_4)-isoxazolyl-3

No.	A
206	5-(3'-NO_2-C_6H_4)-isoxazolyl-3
207	5-(2'-NO_2-C_6H_4)-isoxazolyl-3
208	5-(4'-CN-C_6H_4)-isoxazolyl-3
209	5-(3'-CN-C_6H_4)-isoxazolyl-3
210	5-(2'-CN-C_6H_4)-isoxazolyl-3
211	5-(4'-Cl-C_6H_4)-isoxazolyl-3
212	5-(3'-Cl-C_6H_4)-isoxazolyl-3
213	5-(2'-Cl-C_6H_4)-isoxazolyl-3
214	isothiazolyl-5
215	3-CH_3-isothiazolyl-5
216	3-C_6H_5-isothiazolyl-5
217	3-(4'-CH_3-C_6H_4)-isothiazolyl-5
218	3-(3'-CH_3-C_6H_4)-isothiazolyl-5
219	3-(2'-CH_3-C_6H_4)-isothiazolyl-5
220	3-(4'-CH_3O-C_6H_4)-isothiazolyl-5
221	3-(3'-CH_3O-C_6H_4)-isothiazolyl-5
222	3-(2'-CH_3O-C_6H_4)-isothiazolyl-5
223	3-(4'-NO_2-C_6H_4)-isothiazolyl-5
224	3-(3'-NO_2-C_6H_4)-isothiazolyl-5
225	3-(2'-NO_2-C_6H_4)-isothiazolyl-5
226	3-(4'-CN-C_6H_4)-isothiazolyl-5
227	3-(3'-CN-C_6H_4)-isothiazolyl-5
228	3-(2'-CN-C_6H_4)-isothiazolyl-5
229	3-(4'-Cl-C_6H_4)-isothiazolyl-5
230	3-(3'-Cl-C_6H_4)-isothiazolyl-5
231	3-(2'-Cl-C_6H_4)-isothiazolyl-5
232	oxazolyl-4
233	2-CH_3-oxazolyl-4
234	2-C_6H_5-oxazolyl-4
235	2-(4'-CH_3-C_6H_4)-oxazolyl-4
236	2-(3'-CH_3-C_6H_4)-oxazolyl-4
237	2-(2'-CH_3-C_6H_4)-oxazolyl-4
238	2-(4'-CH_3O-C_6H_4)-oxazolyl-4
239	2-(3'-CH_3O-C_6H_4)-oxazolyl-4
240	2-(2'-CH_3O-C_6H_4)-oxazolyl-4
241	2-(4'-NO_2-C_6H_4)-oxazolyl-4

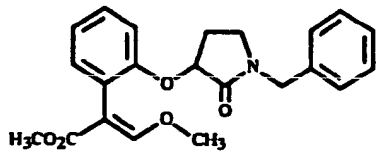
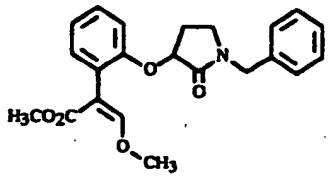
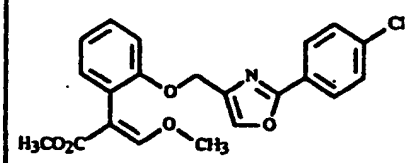
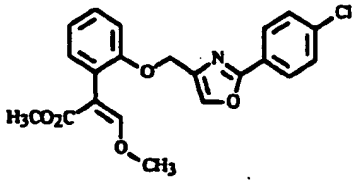
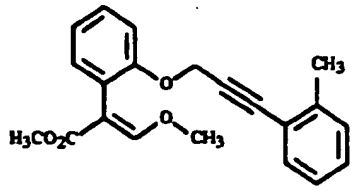
No.	A
242	2-(3'-NO_2-C_6H_4)-oxazolyl-4
243	2-(2'-NO_2-C_6H_4)-oxazolyl-4
244	2-(4'-CN-C_6H_4)-oxazolyl-4
245	2-(3'-CN-C_6H_4)-oxazolyl-4
246	2-(2'-CN-C_6H_4)-oxazolyl-4
247	2-(4'-Cl-C_6H_4)-oxazolyl-4
248	2-(3'-Cl-C_6H_4)-oxazolyl-4
249	2-(2'-Cl-C_6H_4)-oxazolyl-4
250	thiazolyl-4
251	2-CH_3-thiazolyl-4
252	2-C_6H_5-thiazolyl-4
253	2-(4'-CH_3-C_6H_4)-thiazolyl-4
254	2-(3'-CH_3-C_6H_4)-thiazolyl-4
255	2-(2'-CH_3-C_6H_4)-thiazolyl-4
256	2-(4'-CH_3O-C_6H_4)-thiazolyl-4
267	2-(3'-CH_3O-C_6H_4)-thiazolyl-4
258	2-(2'-CH_3O-C_6H_4)-thiazolyl-4
259	2-(4'-NO_2-C_6H_4)-thiazolyl-4
260	2-(3'-NO_2-C_6H_4)-thiazolyl-4
261	2-(2'-NO_2-C_6H_4)-thiazolyl-4
262	2-(4'-CN-C_6H_4)-thiazolyl-4
263	2-(3'-CN-C_6H_4)-thiazolyl-4
264	2-(2'-CN-C_6H_4)-thiazolyl-4
265	2-(4'-Cl-C_6H_4)-thiazolyl-4
266	2-(3'-Cl-C_6H_4)-thiazolyl-4
267	2-(2'-Cl-C_6H_4)-thiazolyl-4
268	N-CH_3-1,2,4-triazolyl-5
269	3-CH_3-N-CH_3-1,2,4-triazolyl-5
270	3-C_6H_5-N-CH_3-1,2,4-triazolyl-5
271	3-(4'-CH_3-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
272	3-(3'-CH_3-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
273	3-(2'-CH_3-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
274	3-(4'-CH_3O-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
275	3-(3'-CH_3O-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
276	3-(2'-CH_3O-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
277	3-(4'-NO_2-C_6H_4)-N-CH_3-1,2,4-triazolyl-5

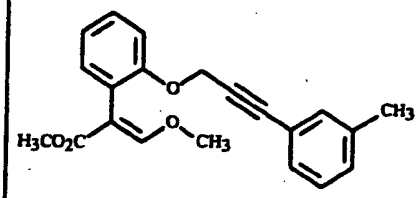
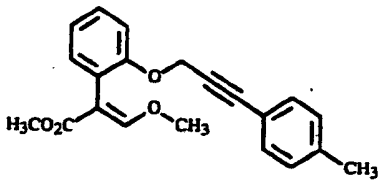
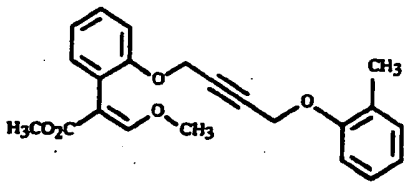
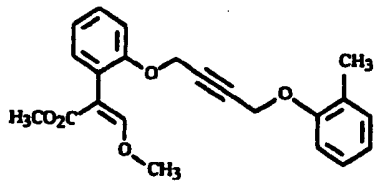
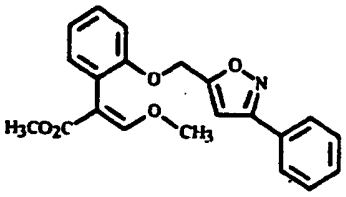
No.	A
278	3-(3'-NO_2-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
279	3-(2'-NO_2-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
280	3-(4'-CN-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
281	3-(3'-CN-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
282	3-(2'-CN-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
283	3-(4'-Cl-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
284	3-(3'-Cl-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
285	3-(2'-Cl-C_6H_4)-N-CH_3-1,2,4-triazolyl-5
286	1,3,4-oxadiazolyl-2
287	5-CH_3-1,3,4-oxadiazolyl-2
288	5-C_6H_5-1,3,4-oxadiazolyl-2
289	5-(4'-CH_3-C_6H_4)-1,3,4-oxadiazolyl-2
290	5-(3'-CH_3-C_6H_4)-1,3,4-oxadiazolyl-2
291	5-(2'-CH_3-C_6H_4)-1,3,4-oxadiazolyl-2
292	5-(4'-CH_3O-C_6H_4)-1,3,4-oxadiazolyl-2
293	5-(3'-CH_3O-C_6H_4)-1,3,4-oxadiazolyl-2
294	5-(2'-CH_3O-C_6H_4)-1,3,4-oxadiazolyl-2
295	5-(4'-NO_2-C_6H_4)-1,3,4-oxadiazolyl-2
296	5-(3'-NO_2-C_6H_4)-1,3,4-oxadiazolyl-2
297	5-(2'-NO_2-C_6H_4)-1,3,4-oxadiazolyl-2
298	5-(4'-CN-C_6H_4)-1,3,4-oxadiazolyl-2
299	5-(3'-CN-C_6H_4)-1,3,4-oxadiazolyl-2
300	5-(2'-CN-C_6H_4)-1,3,4-oxadiazolyl-2
301	5-(4'-Cl-C_6H_4)-1,3,4-oxadiazolyl-2
302	5-(3'-Cl-C_6H_4)-1,3,4-oxadiazolyl-2
303	5-(2'-Cl-C_6H_4)-1,3,4-oxadiazolyl-2
304	1,2,4-oxadiazolyl-3
305	5-CH_3-1,2,4-oxadiazolyl-3
306	5-C_6H_5-1,2,4-oxadiazolyl-3
307	5-(4'-CH_3-C_6H_4)-1,2,4-oxadiazolyl-3
308	5-(3'-CH_3-C_6H_4)-1,2,4-oxadiazolyl-3
309	5-(2'-CH_3-C_6H_4)-1,2,4-oxadiazolyl-3
310	5-(4'-CH_3O-C_6H_4)-1,2,4-oxadiazolyl-3
311	5-(3'-CH_3O-C_6H_4)-1,2,4-oxadiazolyl-3
312	5-(2'-CH_3O-C_6H_4)-1,2,4-oxadiazolyl-3
313	5-(4'-NO_2-C_6H_4)-1,2,4-oxadiazolyl-3

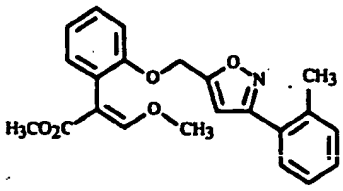
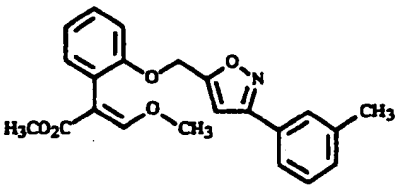
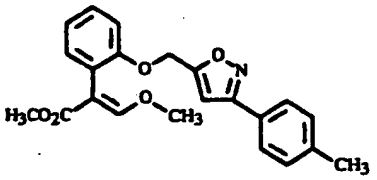
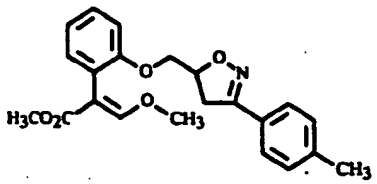
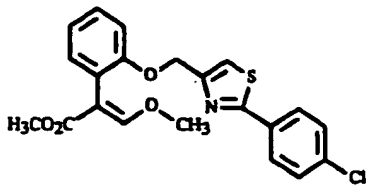
No.	A
314	5-(3'-NO_2-C_6H_4)-1,2,4-oxadiazolyl-3
315	5-(2'-NO_2-C_6H_4)-1,2,4-oxadiazolyl-3
316	5-(4'-CN-C_6H_4)-1,2,4-oxadiazolyl-3
317	5-(3'-CN-C_6H_4)-1,2,4-oxadiazolyl-3
318	5-(2'-CN-C_6H_4)-1,2,4-oxadiazolyl-3
319	5-(4'-Cl-C_6H_4)-1,2,4-oxadiazolyl-3
320	5-(3'-Cl-C_6H_4)-1,2,4-oxadiazolyl-3
321	5-(2'-Cl-C_6H_4)-1,2,4-oxadiazolyl-3
322	1,2,4-oxadiazolyl-5
323	3-CH_3-1,2,4-oxadiazolyl-5
324	3-C_6H_5-1,2,4-oxadiazolyl-5
325	3-(4'-CH_3-C_6H_4)-1,2,4-oxadiazolyl-5
326	3-(3'-CH_3-C_6H_4)-1,2,4-oxadiazolyl-5
327	3-(2'-CH_3-C_6H_4)-1,2,4-oxadiazolyl-5
328	3-(4'-CH_3O-C_6H_4)-1,2,4-oxadiazolyl-5
329	3-(3'-CH_3O-C_6H_4)-1,2,4-oxadiazolyl-5
330	3-(2'-CH_3O-C_6H_4)-1,2,4-oxadiazolyl-5
331	3-(4'-NO_2-C_6H_4)-1,2,4-oxadiazolyl-5
332	3-(3'-NO_2-C_6H_4)-1,2,4-oxadiazolyl-5
333	3-(2'-NO_2-C_6H_4)-1,2,4-oxadiazolyl-5
334	3-(4'-CN-C_6H_4)-1,2,4-oxadiazolyl-5
335	3-(3'-CN-C_6H_4)-1,2,4-oxadiazolyl-5
336	3-(2'-CN-C_6H_4)-1,2,4-oxadiazolyl-5
337	3-(4'-Cl-C_6H_4)-1,2,4-oxadiazolyl-5
338	3-(3'-Cl-C_6H_4)-1,2,4-oxadiazolyl-5
339	3-(2'-Cl-C_6H_4)-1,2,4-oxadiazolyl-5
340	1,2,4-thiadiazolyl-3
341	5-CH_3-1,2,4-thiadiazolyl-3
342	5-C_6H_5-1,2,4-thiadiazolyl-3
343	5-(4'-CH_3-C_6H_4)-1,2,4-thiadiazolyl-3
344	5-(3'-CH_3-C_6H_4)-1,2,4-thiadiazolyl-3
345	5-(2'-CH_3-C_6H_4)-1,2,4-thiadiazolyl-3
346	5-(4'-CH_3O-C_6H_4)-1,2,4-thiadiazolyl-3
347	5-(3'-CH_3O-C_6H_4)-1,2,4-thiadiazolyl-3
348	5-(2'-CH_3O-C_6H_4)-1,2,4-thiadiazolyl-3
349	5-(4'-NO_2-C_6H_4)-1,2,4-thiadiazolyl-3

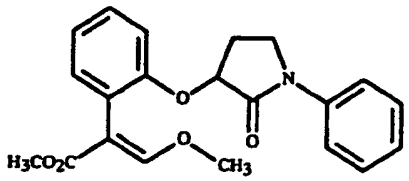
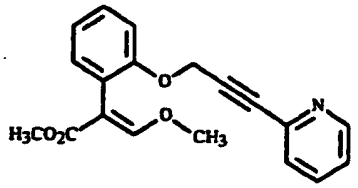
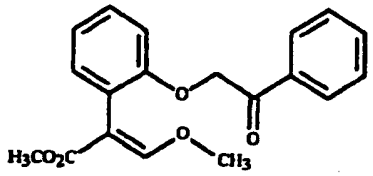
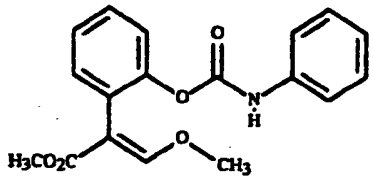
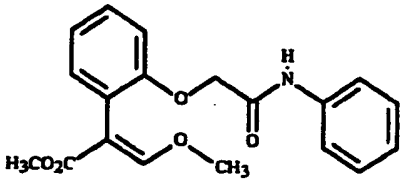
No.	A
350	5-(3'-NO_2-C_6H_4)-1,2,4-thiadiazolyl-3
351	5-(2'-NO_2-C_6H_4)-1,2,4-thiadiazolyl-3
352	5-(4'-CN-C_6H_4)-1,2,4-thiadiazolyl-3
353	5-(3'-CN-C_6H_4)-1,2,4-thiadiazolyl-3
354	5-(2'-CN-C_6H_4)-1,2,4-thiadiazolyl-3
355	5-(4'-Cl-C_6H_4)-1,2,4-thiadiazolyl-3
356	5-(3'-Cl-C_6H_4)-1,2,4-thiadiazolyl-3
357	5-(2'-Cl-C_6H_4)-1,2,4-thiadiazolyl-3
358	1,3,4-thiadiazolyl-2
359	5-CH_3-1,3,4-thiadiazolyl-2
360	5-C_6H_5-1,3,4-thiadiazolyl-2
361	5-(4'-CH_3-C_6H_4)-1,3,4-thiadiazolyl-2
362	5-(3'-CH_3-C_6H_4)-1,3,4-thiadiazolyl-2
363	5-(2'-CH_3-C_6H_4)-1,3,4-thiadiazolyl-2
364	5-(4'-CH_3O-C_6H_4)-1,3,4-thiadiazolyl-2
365	5-(3'-CH_3O-C_6H_4)-1,3,4-thiadiazolyl-2
366	5-(2'-CH_3O-C_6H_4)-1,3,4-thiadiazolyl-2
367	5-(4'-NO_2-C_6H_4)-1,3,4-thiadiazolyl-2
368	5-(3'-NO_2-C_6H_4)-1,3,4-thiadiazolyl-2
369	5-(2'-NO_2-C_6H_4)-1,3,4-thiadiazolyl-2
370	5-(4'-CN-C_6H_4)-1,3,4-thiadiazolyl-2
371	5-(3'-CN-C_6H_4)-1,3,4-thiadiazolyl-2
372	5-(2'-CN-C_6H_4)-1,3,4-thiadiazolyl-2
373	5-(4'-Cl-C_6H_4)-1,3,4-thiadiazolyl-2
374	5-(3'-Cl-C_6H_4)-1,3,4-thiadiazolyl-2
375	5-(2'-Cl-C_6H_4)-1,3,4-thiadiazolyl-2
376	pyridinyl-2
377	pyridinyl-4
378	pyridazinyl-3
379	pyridazinyl-4
380	pyridazinyl-2
381	pyrimidinyl-4
382	pyrimidinyl-5
383	pyrimidinyl-2
384	pyridinyl-3

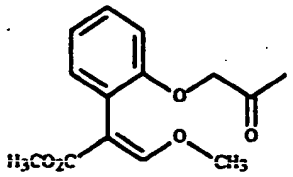
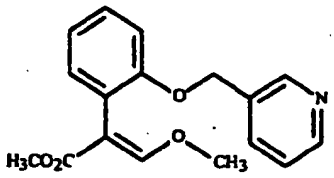
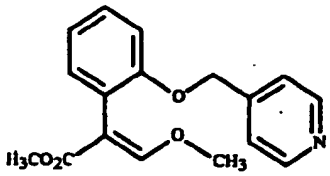
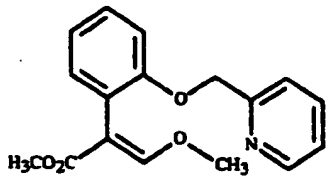
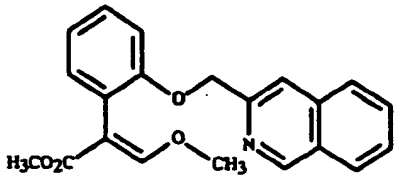
Table 3

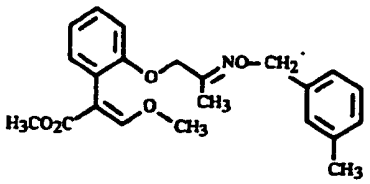
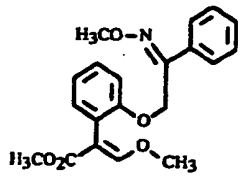
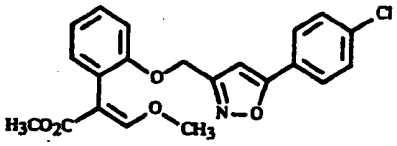
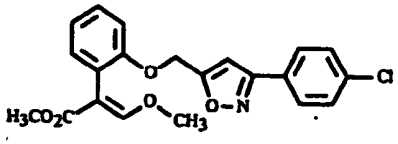
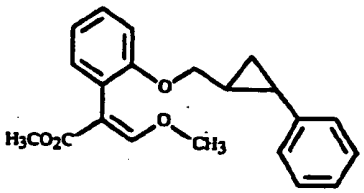
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
1		7.5 (s, 1 H); 3.8 (s, 3 H); 3.65 (s, 3 H)	
2		6.6 (s, 1 H); 3.9 (s, 3 H); 3.65 (s, 3 H)	
3			104
4		6.6 (s, 1 H); 3.9 (s, 3 H); 3.7 (s, 3 H)	
5			80

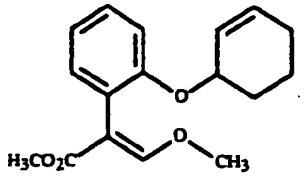
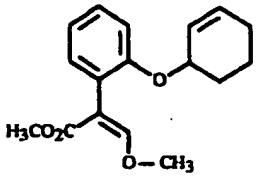
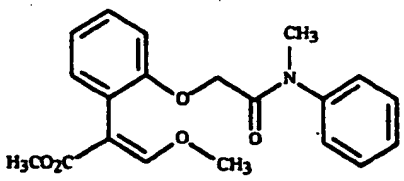
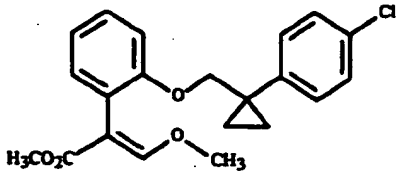
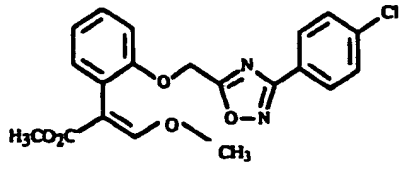
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m p
6			76
7			85
8		7.5 (s, 1 H); 3.8 (s, 3 H); 3.7 (s, 3 H)	
9		6.55 (s, 1 H); 3.9 (s, 3 H); 3.7 (s, 3 H)	
10		7.5 (s, 1 H); 3.8 (s, 3 H); 3.7 (s, 3 H)	

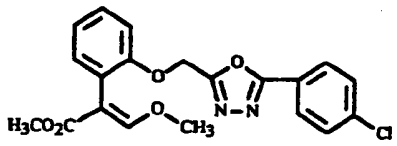
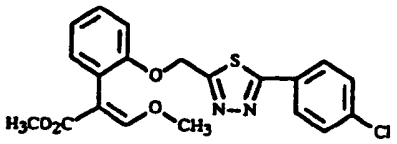
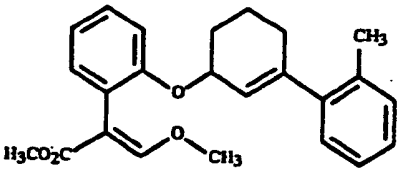
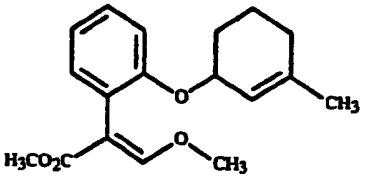
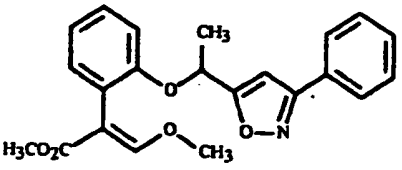
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
11			67
12			99
13			82
14			125
15			127

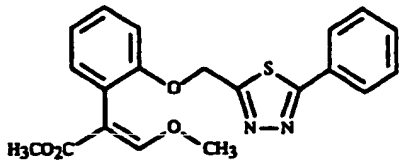
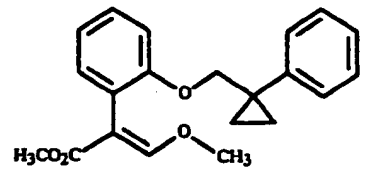
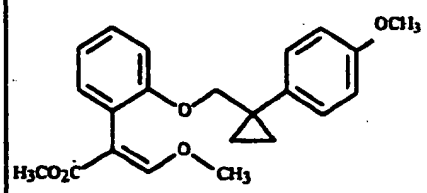
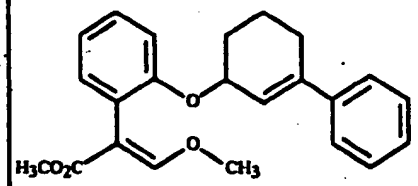
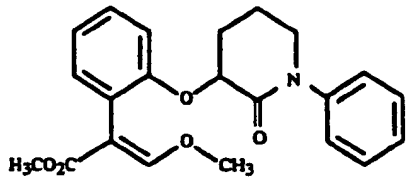
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
16		7.5 (s, 1 H); 3.8 (s, 3 H); 3.7 (s, 3 H)	
17		7.5 (s, 1 H); 3.8 (s, 3 H); 3.7 (s, 3 H)	
18			76
19			179
20			116

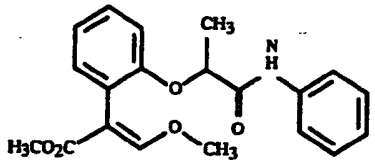
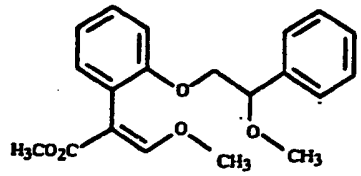
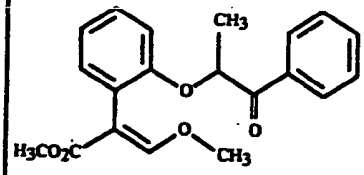
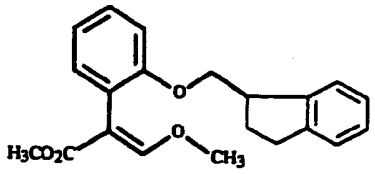
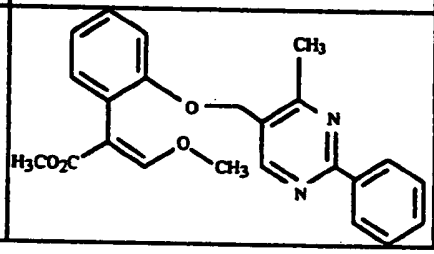
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
21			91
22		7.5 (s, 1 H); 3.75 (s, 3 H); 3.65 (s, 3 H)	
23			98
24		7.55 (s, 1 H); 3.8 (s, 3 H); 3.65 (s, 3 H)	
25			125

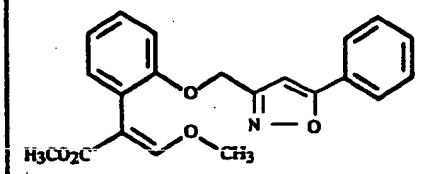
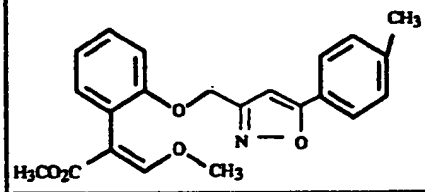
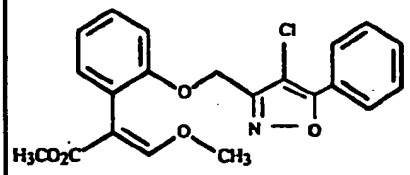
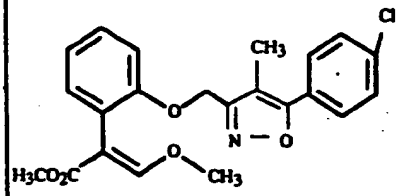
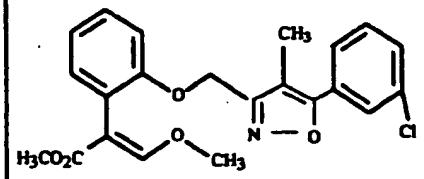
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
26		2 isomers (approx. 3 : 1): 7.5 (2 s, 1 H); 3.8 (2 s, 3 H); 3.65 (2 s, 3 H)	
27			74
28			111
29		7.55 (s, 1 H); 3.8 (s, 3 H); 3.7 (s, 3 H)	
30		7.5 (s, 1 H); 3.75 (s, 3 H); 3.65 (s, 3 H)	

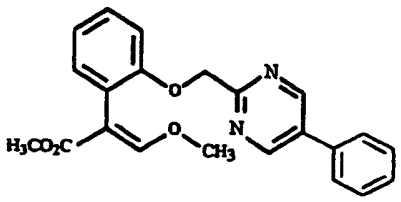
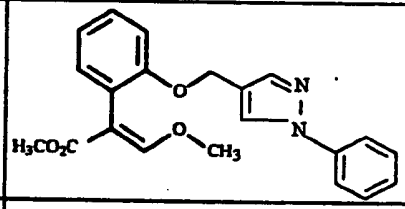
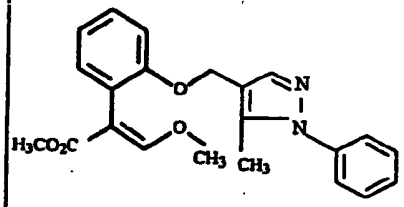
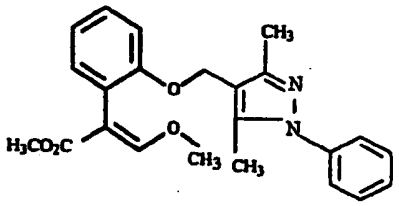
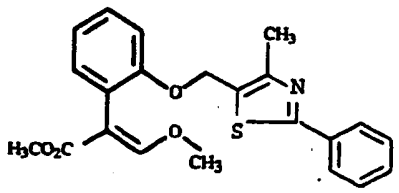
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
31		7.45 (s, 1 H); 3.8 (s, 3 H); 3.65 (s, 3 H)	
32		6.5 (s, 1 H); 3.85 (s, 3H); 3.65 (s, 3 H)	
33			123
34		7.45 (s, 1 H); 3.75 (s, 3 H); 3.6 (s, 3 H)	
35		7.55 (s, 1 H); 3.85 (s, 3 H); 3.7 (s, 3 H)	96

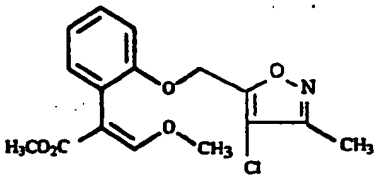
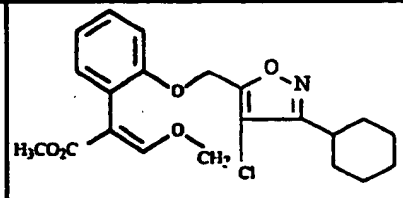
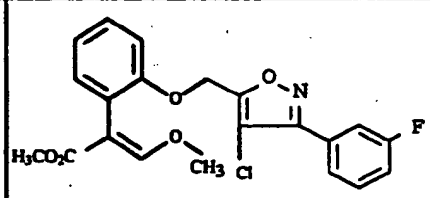
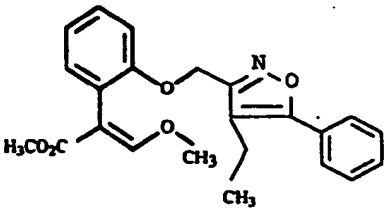
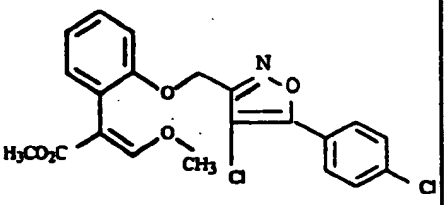
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
36			129
37			129
38		7.45 (s, 1 H); 3.75 (s, 3 H); 3.65 (s, 3 H)	
39		7.45 (s, 1 H); 3.8 (s, 3 H); 3.65 (s, 3 H)	
40		7.5 (s, 1 H); 3.8 (s, 3 H); 3.7 (s, 3 H)	

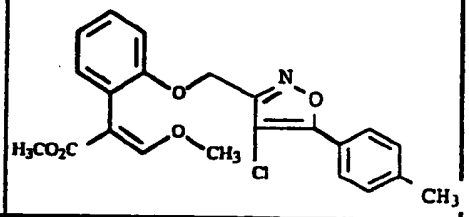
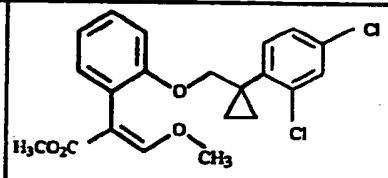
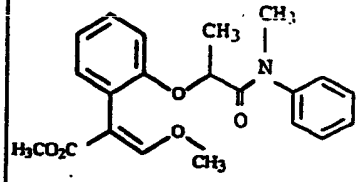
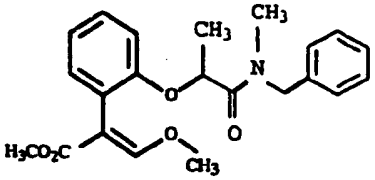
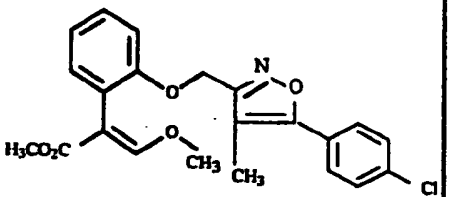
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
41			106
42			78
43		7.45 (s, 1H); 3.75 (s, 3H); 3.7 (s, 3H); 3.6 (s, 3H)	
44		7.46 (s, 1H); 3.75 (s, 3H); 3.6 (s, 3H)	
45			126

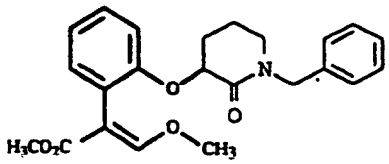
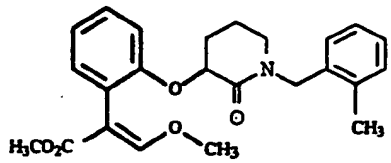
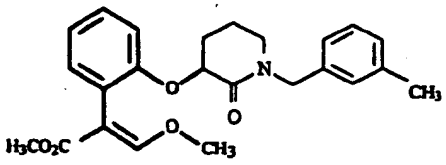
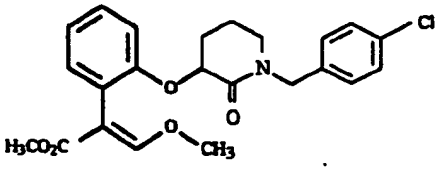
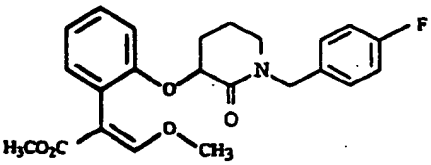
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	Fmp
46		7.6 (s, 1H); 3.9 (s, 3H); 3.8 (s, 3H)	
47		7.45 (s, 1H); 3.75 (s, 3H); 3.65 (s, 3H); 3.35 (s, 3H)	
48			98
49		7.46 (s, 1H); 3.75 (s, 3H); 3.6 (s, 3H)	
50			162

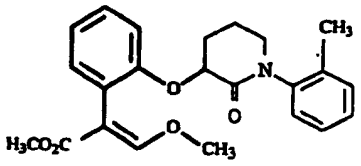
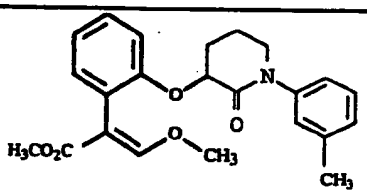
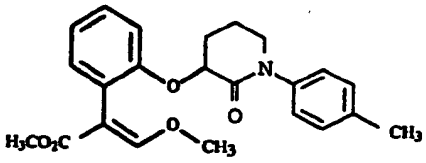
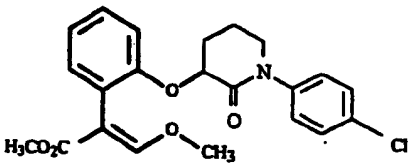
No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
51			81
52			110
53			134
54			138
55			119

No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	mp
56			117
57			97
58		7.6 (s, 1H); 3.8 (s, 3H); 3.65 (s, 3H)	
59			128
60			136

No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
61			82
62			115
63			93
64			103
65			144

No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m.p.
66			135
67		7.4 (s,1H); 3.7 (s,3H); 3.6 (s, 3H)	
68		7.4 (s,5H); 3.8 (s,3H); 3.7(s,3H);	
69			108
70			119

No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	m p
71		7.5 (s,1H); 3.8 (s,3H); 3.7 (s,3H))	
72		7.45 (s,1H); 3.8 (s,3H); 3.7 (s, 3H)	
73		7.45 (s,1H); 3.75 (s,3H); 3.65 (s,3H);	
74		7.5 (s,1H); 3.8 (s,3H); 3.65 (s,3H);	
75			116

No.	Compound	IR (cm^{-1}) or ^1H-NMR (ppm)	mp
76			118
77		7.5 (s,1H); 3.8 (s,3H); 3.7 (s, 3H)	
78			105
79		7.5 (s,1H); 3.8 (s,3H); 3.7 (s,3H);	

The novel compounds are suitable as fungicides.

The fungicidal compounds according to the invention, or agents containing them, may be applied for instance in the form of directly sprayable solutions, powders, suspensions (including high-percentage aqueous, oily or other suspensions), dispersions, emulsions, oil dispersions, pastes, dusts, broadcasting agents, or granules by spraying, atomizing, dusting, broadcasting or watering. The forms of application depend entirely on the purpose for which the agents are being used, but they must ensure as fine a distribution of the active ingredients according to the invention as possible.

Normally, the plants are sprayed or dusted with the active ingredients or the seeds of the plants are treated with the active ingredients.

The formulations are produced in known manner, for example by extending the active ingredient with solvents and/or carriers, with or without the use of emulsifiers and dispersants; if water is used as solvent, it is also possible to employ other organic solvents as auxiliary solvents. Suitable auxiliaries for this purpose are solvents such as aromatics (e.g., xylene), chlorinated aromatics (e.g., chlorobenzenes), paraffins (e.g., crude oil fractions), alcohols (e.g., methanol, butanol), ketones (e.g., cyclohexanone), amines (e.g., ethanolamine, dimethylformamide), and water; carriers such as ground natural minerals (e.g., kaolins, aluminas, talc and chalk) and ground synthetic minerals (e.g., highly disperse silica and silicates); emulsifiers such as nonionic and anionic emulsifiers (e.g., polyoxyethylene fatty alcohol ethers, alkyl sulfonates and aryl sulfonates); and dispersants such as lignin-sulfite waste liquors and methylcellulose.

Examples of surfactants are: alkali metal, alkaline earth metal and ammonium salts of aromatic sulfonic acids, e.g., ligninsulfonic acid, phenolsulfonic acid, naphthalenesulfonic acid and dibutylnaphthalenesulfonic acid, and of fatty acids, alkyl and alkylaryl sulfonates, and alkyl, lauryl ether and fatty alcohol sulfates, and salts of sulfated

hexadecanols, heptadecanols, and octadecanols, salts of fatty alcohol glycol ethers, condensation products of sulfonated naphthalene and naphthalene derivatives with formaldehyde, condensation products of naphthalene or naphthalenesulfonic acids with phenol and formaldehyde, polyoxyethylene octylphenol ethers, ethoxylated isooctylphenol, ethoxylated octylphenol and ethoxylated nonylphenol, alkylphenol polyglycol ethers, tributylphenyl polyglycol ethers, alkylaryl polyether alcohols, isotridecyl alcohol, fatty alcohol ethylene oxide condensates, ethoxylated castor oil, polyoxyethylene alkyl ethers, ethoxylated polyoxypropylene, lauryl alcohol polyglycol ether acetal, sorbitol esters, lignin-sulfite waste liquors and methyl cellulose.

Powders, dusts and broadcasting agents may be prepared by mixing or grinding the active ingredients with a solid carrier.

Granules, e.g., coated, impregnated or homogeneous granules, may be prepared by bonding the active ingredients to solid carriers. Examples of solid carriers are mineral earths such as silicic acids, silica gels, silicates, talc, kaolin, attapulgus clay, limestone, lime, chalk, bole, loess, clay, dolomite, diatomaceous earth, calcium sulfate, magnesium sulfate, magnesium oxide, ground plastics, fertilizers such as ammonium sulfate, ammonium phosphate, ammonium nitrate, and ureas, and vegetable products such as grain meals, bark meal, wood meal, and nutshell meal, cellulosic powders, etc.

Examples of formulations are given below.

I. A solution of 90 parts by weight of compound no. 1 from Table 3 and 10 parts by weight of N-methyl-α-pyrrolidone, which is suitable for application in the form of very fine drops.

II. A mixture of 20 parts by weight of compound no. 2 from Table 3, 80 parts by weight of xylene, 10 parts by weight of the adduct of 8 to 10 moles of ethylene oxide and 1 mole of oleic acid-N-monoethanolamide, 5 parts by weight of the calcium salt of dodecylbenzenesulfonic acid, and 5 parts by weight of the adduct of 40 moles of ethylene oxide and

1 mole of castor oil. By finely dispersing the mixture in water, an aqueous dispersion is obtained.

III. An aqueous dispersion of 20 parts by weight of compound no. 3 from Table 3, 40 parts by weight of cyclohexanone, 30 parts by weight of isobutanol, 20 parts by weight of the adduct of 40 moles of ethylene oxide and 1 mole of castor oil.

IV. An aqueous dispersion of 20 parts by weight of compound no. 4 from Table 3, 25 parts by weight of cyclohexanol, 65 parts by weight of a mineral oil fraction having a boiling point between 210 and 280°C, and 10 parts by weight of the adduct of 40 moles of ethylene oxide and 1 mole of castor oil.

V. A hammer-milled mixture of 80 parts by weight of compound no. 5 from Table 3, 3 parts by weight of the sodium salt of diisobutylnaphthalene-α-sulfonic acid, 10 parts by weight of the sodium salt of a lignin-sulfonic acid obtained from a sulfite waste liquor, and 7 parts by weight of powdered silica gel. By finely dispersing the mixture in water, a spray liquor is obtained.

VI. An intimate mixture of 3 parts by weight of compound no. 6 from Table 3 and 97 parts by weight of particulate kaolin. The dust contains 3wt% of the active ingredient.

VII. An intimate mixture of 30 parts by weight of compound no. 7 from Table 3, 92 parts by weight of powdered silica gel and 8 parts by weight of paraffin oil sprayed onto the surface of this silica gel. This formulation of the active ingredient exhibits good adherence.

VIII. A stable aqueous dispersion of 40 parts by weight of compound no. 8 from Table 3, 10 parts of the sodium salt of a phenolsulfonic acid-urea-formaldehyde condensate, 2 parts of silica gel and 48 parts of water, which dispersion can be further diluted.

IX. A stable oily dispersion of 20 parts by weight of compound no. 9 from Table 3, 2 parts by weight of the calcium salt of dodecylbenzenesulfonic acid, 8 parts by

weight of a fatty alcohol polyglycol ether, 2 parts by weight of the sodium salt of a phenolsulfonic acid-urea-formaldehyde condensate and 68 parts by weight of a paraffinic mineral oil.

The novel compounds are extremely effective on a broad spectrum of phytopathogenic fungi, in particular those from the class consisting of the Ascomycetes and Basidiomycetes. Some of them have a systemic action and can be used as foliar and soil fungicides.

The fungicidal compounds are of particular interest for controlling a large number of fungi in various crops or their seeds, especially wheat, rye, barley, oats, rice, Indian corn, lawns, cotton, soybeans, coffee, sugar cane, fruit and ornamentals in horticulture and viticulture, and in vegetables such as cucumbers, beans and cucurbits.

The compounds are applied by treating the fungi or the seeds, plants, materials or the soil to be protected against fungus attack with an effective amount of the active ingredients.

Application may be effected before or after infection of the materials, plants or seed by the fungi.

The compounds I are particularly useful for controlling the following plant diseases:

Erysiphe graminis in cereals,
Erysiphe cichoracearum and Sphaerotheca fuliginea in cucurbits,
Podosphaera leucotricha in apples,
Uncinula necator in vines,
Puccinia species in cereals,
Rhizoctonia solani in cotton,
Ustilago species in cereals and sugar cane,
Venturia inaequalis (scab) in apples,
Helminthosporium species in cereals,
Septoria nodorum in wheat,
Botrytis cinerea (gray mold) in strawberries and grapes,
Cercospora arachidicola in groundnuts,
Pseudocercosporella herpotrichoides in wheat and barley,

Pyricularia oryzae in rice,
Phytophthora infestans in potatoes and tomatoes,
Fusarium and Verticillium species in various plants,
Plasmopara viticola in grapes,
Alternaria species in fruit and vegetables.

The novel compounds may also be used for protecting materials (timber) against, for example, Paecilomyces variotii.

Generally, the fungicidal agents contain from 0.1 to 95, and preferably from 0.5 to 90, wt% of active ingredient.

The application rates depend on the effect desired, and vary from 0.02 to 3 kg of active ingredient per hectare.

When the active ingredients are used for treating seed, rates of from 0.001 to 50, and preferably from 0.01 to 10, g per kg of seed are generally needed.

When applied as fungicides, the agents according to the invention may also be present together with other active ingredients, for example herbicides, insecticides, growth regulators, other fungicides, or fertilizers.

When admixed with other fungicides, the fungicidal spectrum of action is in many cases increased.

Use examples

The active ingredient used for comparison purposes was methyl 2-(2-hydroxyphenyl)-3-methoxyacrylate (A) disclosed in EP 251 082.

Use Example 1

Action on Plasmopara viticola

Leaves of potted vines of the Müller-Thurgau variety were sprayed with aqueous suspensions containing (dry basis) 80% of active ingredient and 20% of emulsifier. To assess the duration of action, the plants were set up, after the sprayed-on layer had dried, for 8 days in the greenhouse. Then the leaves were infected with a zoospore suspension of

Plasmopara viticola. The plants were first placed for 48 hours in a water vapor-saturated chamber at 24°C and then in a greenhouse for 5 days at from 20 to 30°C. To accelerate and intensify the sporangiophore discharge, the plants were then again placed in the moist chamber for 16 hours. The extent of fungus attack was then assessed on the undersides of the leaves.

The results show that active ingredients nos. 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 15, 18, 26, 28 und 29 from Table 3, when applied as spray liquors containing 250 ppm (by weight) of active ingredient, have a better fungicidal action (90%) than prior art comparative agent A (40%).

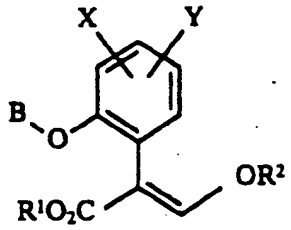
Use example 2
Action on wheat brown rust

Leaves of pot-grown wheat seedlings of the "Kanzler" variety were dusted with spores of brown rust (Puccinia recondita). The pots were then placed for 24 hours at 20 to 22°C in a high-humidity (90 - 95%) chamber. During this period the spores germinated and the germ tubes penetrated the leaf tissue. The infected plants were then sprayed to runoff with aqueous liquors containing (dry basis) 80% of active ingredient and 20% of emulsifier. After the sprayed-on layer had dried, the plants were set up in the greenhouse at 20 to 22°C and a relative humidity of 65 to 70%. The extent of rust fungus spread on the leaves was assessed after 8 days.

The results of the experiment show that active ingredients nos. 7, 8, 10 and 31 from Table 3, when applied as a spray liquor containing 250 ppm of active ingredient, have a better fungicidal action (95%) than prior art comparative compound A (0%).

We claim:-

1. A substituted acrylate of the formula I



I

where

B is alkyl which is substituted by 1-4 identical or different substituents R^3, alkenyl which is substituted by 1-4 identical or different substituents R^4, alkynyl which is substituted by 1-4 identical or different substituents R^5, cycloalkyl which is substituted by 1-4 identical or different substituents R^6, cycloalkenyl which is substituted by 1-4 identical or different substituents R^7, cycloalkynyl which is substituted by 1-4 identical or different substituents R^8 or heterocyclyl which is substituted by 1-4 identical or different substituents R^9,

X and Y independently of one another are each hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocycyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkyloxycarbonyl aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylamino-

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if X and Y are on adjacent carbon atoms, they may be condensed to form an unsubstituted or substituted aromatic or heteroaromatic, alicyclic or heterocyclic, partially or completely hydrogenated ring,

R^1 and R^2 may be substituted and independently of one another are each alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkenyl, R^3 and R^4 may be substituted by 1-4 identical or different substituents R^{10}, and R^3 and R^4 are each

nitro, haloalkoxy, alkoxy, alkynyl, cycloalkyl, hetaryl, heterocyclyl, cycloalkenyl, cycoalkynyl, alkenyloxy, alkynyloxy, cycloalkoxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, cycloalkyloxycarbonyl aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonyl-

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R^5, R^6, R^7 and R^8 may be substituted by 1-4 identical or different substituents R^{10}, and R^5, R^6, R^7 and R^8 are each nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxyl, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclyl-

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R^{10} may be substituted by 1-4 identical or different substituents R^{11}, and R^{10} is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino,

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arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,
R^{11} may be substituted and is hydrogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cylcoalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cyclocoalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy,

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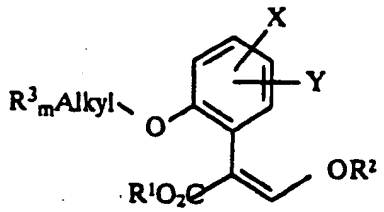
and the acid addition products and base addition products of this compound.

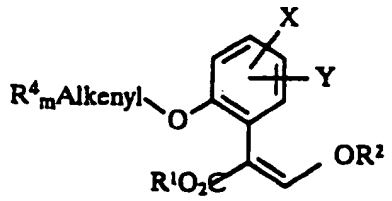
2. A substituted acrylate of the formula II



II

where R^1, R^2, R^3, X and Y have the meanings stated in claim 1 and m is 1, 2, 3 or 4.

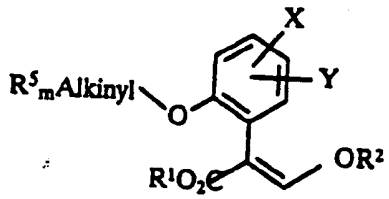
3. A substituted acrylate of the formula III



III

where R^1, R^2, R^4, X and Y have the meanings stated in claim 1 and m is 1, 2, 3 or 4.

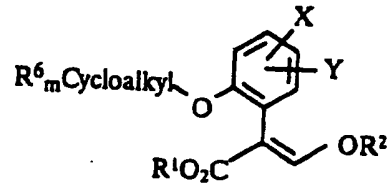
4. A substituted acrylate of the formula IV



IV

where R^1, R^2, R^5, X and Y have the meanings stated in claim 1 and m is 1, 2, 3 or 4.

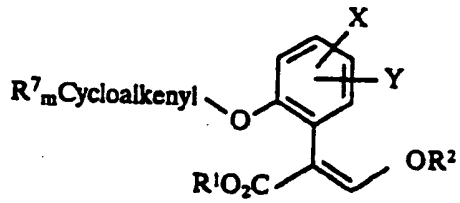
5. A substituted acrylate of the formula V



V

where R^1, R^2, R^6, X and Y have the meanings stated in claim 1 and m is 1, 2, 3 or 4.

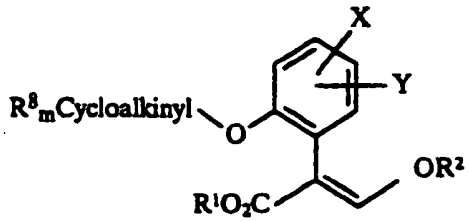
6. A substituted acrylate of the formula VI



VI

where R^1, R^2, R^7, X and Y have the meanings stated in claim 1 and m is 1, 2, 3 or 4.

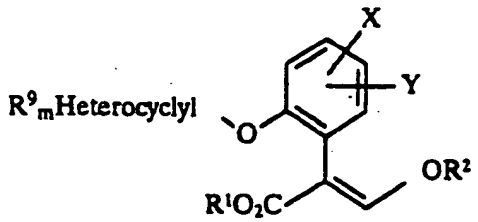
7. A substituted acrylate of the formula VII



VII

where R^1, R^2, R^9, X and Y have the meanings stated in claim 1 and m is 1, 2, 3 or 4.

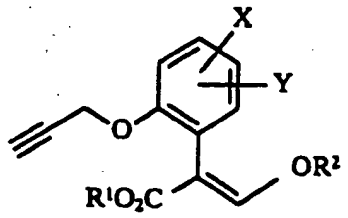
8. A substituted acrylate of the formula VIII



VIII

where R^1, R^2, R^9, X and Y have the meanings stated in claim 1 and m is 1, 2, 3 or 4.

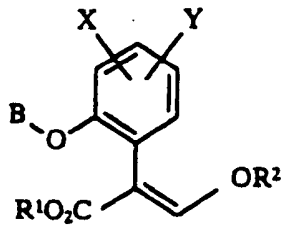
9. A compound of the formula IX



IX

where R^1, R^2, X and Y have the meanings stated in claim 1.

10. A fungicide containing an inert carrier and a fungicidal amount of a substituted acrylate of the formula I



I

where

B is alkyl which is substituted by 1-4 identical or different substituents R^3, alkenyl which is substituted by 1-4 identical or different substituents R^4, alkynyl which is substituted by 1-4 identical or different substituents R^5, cycloalkyl which is substituted by 1-4 identical or different substituents R^6, cycloalkenyl which is substituted by 1-4 identical or different substituents R^7, cycloalkynyl which is substituted by 1-4 identical or different substituents R^8 or heterocyclyl which is substituted by 1-4 identical or different substituents R^9,

X and Y independently of one another are each hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkyloxy-

carbonyl aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cylcoalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

if X and Y are on adjacent carbon atoms, they may be condensed to form an unsubstituted or substituted

aromatic or heteroaromatic, alicyclic or heterocyclic, partially or completely hydrogenated ring,

R^1 and R^2 may be substituted and independently of one another are each alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkenyl, R^3 and R^4 may be substituted by 1-4 identical or different substituents R^{10}, and R^3 and R^4 are each nitro, haloalkoxy, alkoxy, alkynyl, cycloalkyl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkenyloxy, alkynyloxy, cycloalkoxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, cycloalkoxycarbonyl aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cylcoalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl,

cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, hetarylalkoxy, heterocyclylalkoxy, alkynylalkenyl, cycloalkylalkenyl, cycloalkenylalkenyl, cycloalkynylalkenyl, hetarylalkenyl, heterocyclylalkenyl, alkoximinoalkyl, alkenyloximinoalkyl, alkynyloximinoalkyl, cycloalkoximinoalkyl, cycloalkenyloximinoalkyl, cycloalkynyloximinoalkyl, aryloximinoalkyl, hetaryloximinoalkyl, heterocyclyloximinoalkyl, alkoximinoalkenyl, alkenyloximinoalkenyl, alkynyloximinoalkenyl, cycloalkoximinoalkenyl, cycloalkenyloximinoalkenyl, cycloalkynyloximinoalkenyl, aryloximinoalkenyl, hetaryloximinoalkenyl or heterocyclyloximinoalkenyl,

R^5, R^6, R^7 and R^8 may be substituted by 1-4 identical or different substituents R^{10}, and R^5, R^6, R^7 and R^8 are each nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxyl, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyoxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl,

hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino or heterocyclylcarbonylamino, R^9 may be substituted by 1-4 identical or different substituents R^{10}, and R^9 is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkoximino, cyclocoalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyoxycarbonyl,

cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

R^{10} may be substituted by 1-4 identical or different substituents R^{11}, and R^{10} is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl,

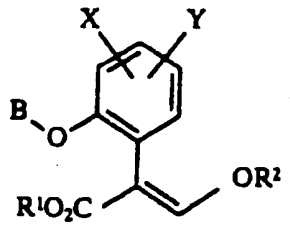
cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cyclocoalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cylcoalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynyl-

carbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

R^{11} may be substituted and is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkoximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocycloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyoxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl,

alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,
or an acid addition product or base addition product of this compound.

11. A method for controlling fungi, wherein the fungi or the plants, seed or materials threatened by fungal attack or the soil is or are treated with a fungicidal amount of a compound of the formula I



I

where

B is alkyl which is substituted by 1-4 identical or different substituents R^3, alkenyl which is substituted by 1-4 identical or different substituents R^4, alkynyl which is substituted by 1-4 identical or different substituents R^5, cycloalkyl which is substituted by 1-4 identical or different substituents R^6, cycloalkenyl which is substituted by 1-4 identical or different substituents R^7, cycloalkynyl which is substituted by 1-4 identical or different substituents R^8 or heterocyclyl which is

substituted by 1-4 identical or different substituents R^9, X and Y independently of one another are each hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocycyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkyloxycarbonyl aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy,

cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cylcoalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

if X and Y are on adjacent carbon atoms, they may be condensed to form an unsubstituted or substituted aromatic or heteroaromatic, alicyclic or heterocyclic, partially or completely hydrogenated ring,

R^1 and R^2 may be substituted and independently of one another are each alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkenyl, R^3 and R^4 may be substituted by 1-4 identical or different substituents R^{10}, and R^3 and R^4 are each nitro, haloalkoxy, alkoxy, alkynyl, cycloalkyl, hetaryl, heterocyclyl, cycloalkenyl, cycoalkynyl, alkenyloxy, alkynyloxy, cycloalkoxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, cycloalkyloxycarbonyl aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl,

alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, hetarylalkoxy, heterocyclylalkoxy, alkynylalkenyl, cycloalkylalkenyl, cycloalkenylalkenyl, cycloalkynylalkenyl, hetarylalkenyl, heterocyclylalkenyl, alkoximinoalkyl, alkenyloximinoalkyl, alkynyloximinoalkyl, cycloalkoximinoalkyl, cycloalkenyloximinoalkyl, cycloalkynyloximinoalkyl, aryloximinoalkyl, hetaryloximinoalkyl, heterocyclyloximinoalkyl, alkoximinoalkenyl, alkenyloximinoalkenyl, alkynyloximinoalkenyl, cycloalkoximinoalkenyl, cycloalkenyloximinoalkenyl, cycloalkynyloximinoalkenyl, aryloximinoalkenyl, hetaryloximinoalkenyl or heterocyclyloximinoalkenyl,

R^5, R^6, R^7 and R^8 may be substituted by 1-4 identical or different substituents R^{10}, and R^5, R^6, R^7 and R^8 are each nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cyclo-

alkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkoximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyoxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino or heterocyclylcarbonylamino, R^9 may be substituted by 1-4 identical or different substituents R^{10}, and R^9 is hydrogen, halogen, cyano,

nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cyclocoalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxyxarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy,

arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

R^{10} may be substituted by 1-4 identical or different substituents R^{11}, and R^{10} is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkyloximino, cyclocoalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino, cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, cycloalkenylsulfoxyl,

alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

R^{11} may be substituted and is hydrogen, halogen, cyano, nitro, haloalkyl, alkyl, haloalkoxy, alkenyl, alkynyl, cycloalkyl, aryl, hetaryl, heterocyclyl, cycloalkenyl, cycloalkynyl, alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, aryloxy, hetaryloxy, heterocyclyloxy, cycloalkenyloxy, cycloalkynyloxy, alkoximino, alkenyloximino, alkynyloximino, cycloalkoximino, cycloalkenyloximino, cycloalkynyloximino, aryloximino, hetaryloximino, heterocyclyloximino, alkoxycarbonyl, alkenylcarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, aryloxycarbonyl, hetaryloxycarbonyl, heterocyclyloxycarbonyl, cycloalkenyloxycarbonyl, cycloalkynyloxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkenylaminocarbonyl, dialkenylaminocarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl, cycloalkylaminocarbonyl, cycloalkenylaminocarbonyl, cycloalkynylaminocarbonyl, arylaminocarbonyl, hetarylaminocarbonyl, heterocyclylaminocarbonyl, alkylthio, alkenylthio, alkynylthio, cycloalkylthio, arylthio, hetarylthio, heterocyclylthio, cycloalkenylthio, cycloalkynylthio, alkylamino, alkenylamino, alkynylamino,

cycloalkylamino, arylamino, hetarylamino, heterocyclylamino, cycloalkenylamino, cycloalkynylamino, alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, arylcarbonyl, hetarylcarbonyl, heterocyclylcarbonyl, cycloalkenylcarbonyl, cycloalkynylcarbonyl, alkylsulfoxyl, alkenylsulfoxyl, alkynylsulfoxyl, cycloalkylsulfoxyl, arylsulfoxyl, hetarylsulfoxyl, heterocyclylsulfoxyl, cycloalkynylsulfoxyl, alkylsulfonyl, alkenylsulfonyl, alkynylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, hetarylsulfonyl, heterocyclylsulfonyl, cycloalkenylsulfonyl, cycloalkynylsulfonyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylsulfinyl, alkenylsulfinyl, alkynylsulfinyl, cycloalkylsulfinyl, arylsulfinyl, hetarylsulfinyl, heterocyclylsulfinyl, cycloalkenylsulfinyl, cycloalkynylsulfinyl, alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, cycloalkynylcarbonyloxy, arylcarbonyloxy, hetarylcarbonyloxy, heterocyclylcarbonyloxy, alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, cycloalkynylcarbonylamino, arylcarbonylamino, hetarylcarbonylamino, heterocyclylcarbonylamino, cycloalkylalkoxy, cycloalkenylalkoxy, cycloalkynylalkoxy, arylalkoxy, hetarylalkoxy or heterocyclylalkoxy,

or an acid addition product or base addition product of this compound.